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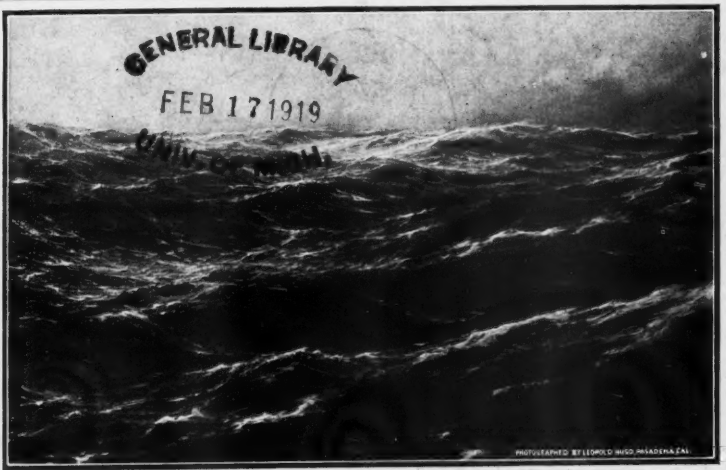

FEBRUARY 1919

VOL. XXV, NO. 2

EDITED BY
GEORGE WOOD CLAPP, D.D.S.
PUBLISHED BY
THE DENTISTS' SUPPLY CO.
CANDLER BLDG., TIMES SQUARE
220 WEST 42ND ST., NEW YORK

Announcement

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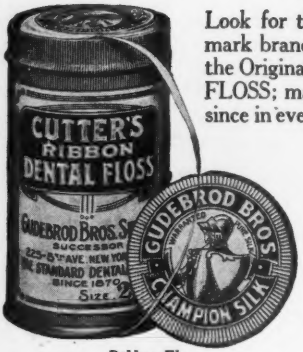

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THE
DENTAL DIGEST

Vol. XXV FEBRUARY, 1919 No. 2

ALVEOLECTOMY

AN OPERATION FOR THE REDUCTION OF ABNORMAL FORMATIONS OF THE ALVEOLAR PROCESS

By Armin Wald, D.D.S., New York, N. Y.

The modern prosthodontist has discovered that it is no longer necessary for him to accept the abnormal alveolar ridges, which so often remain after the extraction of the teeth, as an irremovable handicap.

The requirements of modern denture service have brought out the necessity for removing such portions of the alveolar ridge as are found to interfere with the proper establishment of the occlusal plane, the correct articulation of the artificial teeth and the restoration or improvement of the expression and contour of the face.

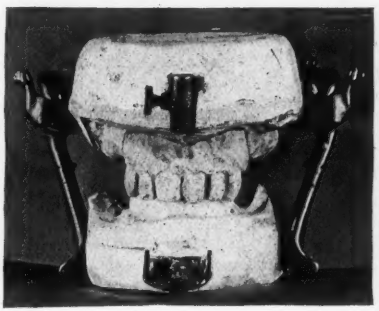


Fig. 1

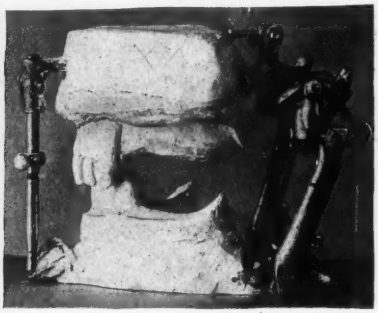


Fig. 2

In the past few years a simple operation for the removal of prominent portions of the alveolar ridges has been developed, and the results are so uniformly satisfactory that it has become routine practice with many prosthodontists.

This operation was, I believe, first performed in this country by Dr. J. P. Ruyl, whose work in artistic restorations proved the necessity for surgical interference.

The object of this article is to illustrate various steps of the operation which the writer first saw Dr. Ruyl perform. Some slight changes have

been adopted as a result of the requirements met with in the treatment of varied and extreme cases.

A definite working plan is the first essential of a successful alveolectomy. This is prepared by taking impressions and making study models of both jaws, mounted on an articulator in the same relations as in the subject. By noting conditions the extent of the operation can be determined and marked on the models (Figs. 1 and 2) for the guidance of the oral surgeon, if one is employed, and in the majority of cases it is advisable to call in the oral surgeon, unless the prosthodontist is thoroughly familiar with the work.

In addition to the models, which are always necessary, two photographs of the patient (a full front view, Fig. 3, and a profile view, Fig. 4,)

Fig. 3

Fig. 4

will be found very helpful in many cases. The photographs assist one to visualize the proposed change in the facial contour, and while it is necessary to study the patient's face in person, the photographs are always available for comparison and study and serve as valuable checks on the work as well as excellent records.

Before the day set for the operation the patient should be advised to take a cathartic, eat light nourishing meals and secure a good night's sleep so as to appear for the operation in a rested condition. This is important, as it means a much more satisfactory result for both patient and operator, with fewer complications.

When the patient presents for the operation, all instruments shall have been sterilized, a full supply of sterile gauze wipes, cotton swabs, towels, napkins and other linen must be provided and a waterproof apron secured for the patient.

Adjust the operating chair to the patient as comfortably as possible and adjust the waterproof apron. The head band is then fitted (Figs. 5 and 6) and the lips retracted so that the field of operation is as accessible as possible. The gums are dried and painted with a 20 per cent. solution of Iodine in alcohol.

Conductive anaesthesia is used for nerve blocking and the tissues within the area operated are thoroughly infiltrated with an anaesthetic

Fig. 5

Fig. 6

containing suprarenin to reduce the usual hemorrhage, making the operation a comparatively bloodless one.

An incision is made buccally behind the canine eminence from about the height of the root apex, downward through the gingiva. A similar incision is made over the tuberosity, if this region requires reduction.

Another incision is made over the gingival margins labially and buccally of all teeth to be removed, severing the adhesions to the process and cutting through the gingival septi. Where teeth are missing the incision is continued over the ridge to the next tooth.

With the periosteal elevator release the periosteum from the process,

labially and buccally, two or three millimeters higher than the process is to be removed (Fig. 7).

The teeth are now extracted without fear of lacerating the soft tissues in case of difficulties met with in extracting.

The gum and periosteum is retracted with small artery forceps, or gum retractors, and fastened to the head band (Fig. 8).

With a half-inch, mounted, knife-edge carborundum engine stone a groove about one millimeter deep is cut into the process up as high toward the end of the root sockets as the process is to be removed. This groove extends over the entire section to be removed and facilitates the removal of the process in large sections to a prescribed height and prevents splitting the process higher than desired.

With a narrow blade bone-cutting forceps cut through the alveolar septi as high as the groove, if possible, after which the process can be readily pried off to the limiting groove. The palatal periosteum is left untouched unless some of the palatal plate is to be removed, in which

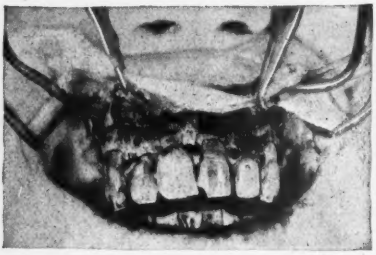


Fig. 7

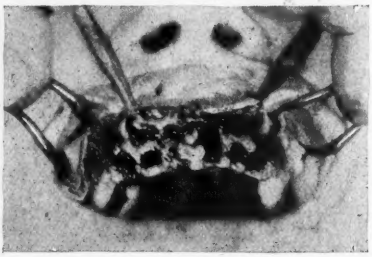


Fig. 8

event it is released from the process, and the plate is removed to the desired lines.

With the Ronguer forceps cut away any remaining process that needs trimming, and with coarse grit carborundum engine stone smooth all rough places and sharp points; this is very important. The stones are kept constantly flushed with a normal salt solution. Now irrigate the wound thoroughly with a mild antiseptic or normal salt solution and release the periosteum.

With a pair of curved Mayo scissors trim the edge of the gum flap, removing the gingival scollops. In this trimming it is very important to leave a space of about two to three millimeters between the edges of the labial and buccal flaps and the lingual margin (Fig. 9). Too close adaptation might result in loose and flabby tissue formation, or, as has been noted in some cases, a ridge of hard scar tissue is formed which

interferes with the proper seating of the denture. The wound is not sutured, open drainage being preferred (Fig. 10).

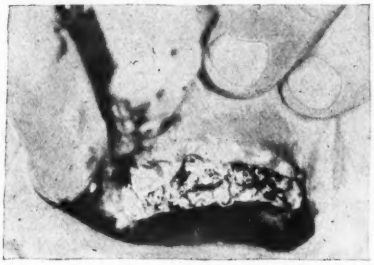


Fig. 9

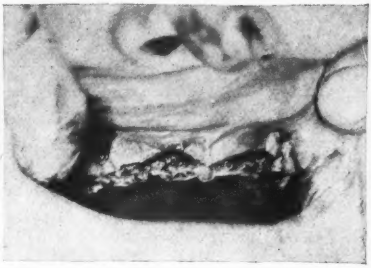


Fig. 10

Normal salt solution is prescribed as a mouth wash to be used every two hours. A laxative is prescribed and the patient is dismissed with instructions to report in 24 to 48 hours for observation.

The wounds heal in from 24 to 36 hours (Fig. 11), and the mouth is ready for permanent denture impression in from 5 to 10 days, as no

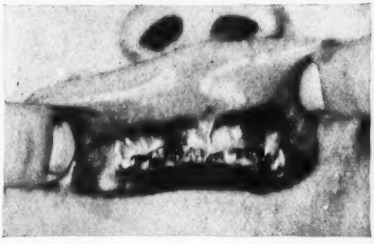


Fig. 11

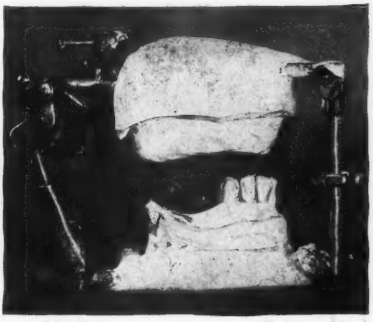


Fig. 12

further absorption takes place that will materially affect the fit of the denture (Fig. 12).

The operator's skilled assistant is an indispensable factor in the successful performance of the operation. She or he must be trained to know all steps and be prepared for them, as well as for any emergencies that may arise. She must keep the patient comfortable with the saliva ejector or sponges, keep the field of operation clear of blood and see that the tissues, lips and cheeks are properly retracted. She must keep the stone flushed while the operator grinds the process, and should an-

ticipate every need of the patient and operator from the beginning of the operation until the patient is dismissed.

It is to be noted that this operation on the alveolar process may be performed in an edentulous mouth with equally beneficial results, and many cases that have been the despair of skilful dentists, have proven to be comparatively simple when abnormal protrusions and formations have been removed. Such cases invariably result in greatly improved service to the patient whether viewed from the standpoint of utility or esthetics.

Do not accept such handicaps. Remove them.

SUMMARY

The operation should be performed under strict surgical asepsis.

The operation is a simple one and can be performed by a dentist skilled in extracting and oral surgery.

Alveolectomy should be performed whenever abnormal protrusion of the process precludes scientific and artistic denture construction and facial restoration.

Fig. 13

Fig. 14

Figs. 13-14, showing photographs of the patient taken immediately after the operation. By comparing these photographs with Figs. 3 and 4, the decided improvement in the features will be apparent.

Fig. 15

Fig. 16

INSTRUMENTS USED IN ALVEOLECTOMY

Iodine 20 per cent. in alcohol.
Mouth mirror.
Thumb forceps.
Head band, with hooks
Cheek and lip retractors.
Porcelain dissolving dish.
Alcohol lamp.
Distilled water.
Ringer tablets.
Novocaine tablets, "E" and "T",
One hypodermic syringe.
Long and short needles.
Lancet.
Periosteal elevator. (Wax spatula as used by Ruyl, Figs. 15-16).
Periosteal retractors.
Curved and straight Mayo scissors.
Two small artery clamps.
Extracting forceps.
Sharp edge carborundum stones, $\frac{1}{2}$ in., mounted.
Narrow blade bone-cutting forceps.
Ronguer forceps.
Rough grit engine round and pear shape.
Spooner water syringe.
Gauze wipes, cotton swabs, towels, napkins, apron, operating coat, etc.

323 East 86th Street, N. Y.

DENTAL LAWS

DENTAL LICENSE REQUIREMENTS

By Alphonso Irwin, D.D.S., Camden, N. J.

CODIFICATION—*Continued*

Minnesota: Act, 1911, From Dental Laws. "Provided that any dentist who has been in legal practice in another state having and maintaining an equal standard of laws regulating the practice of dentistry with this state, for five years or more, and is a reputable dentist of good, moral character, and is desirous of removing to this state and deposits in person with the Board of Dental Examiners a certificate from the Examining Board of the state in which he is registered, certifying to the fact of his registration and that he is of good moral character and professional attainments, and upon payment of a fee of fifty dollars ($50.00) may, at the discretion of the Board, be granted a license to practise in this state without further theoretical examination."

Missouri: Law, April 10, 1917. Section 5495-b. Dentists In Other States Removing to This State—How Licensed, Etc. "Any dentist who has been lawfully licensed to practise in another state, having and maintaining a standard of proficiency equal with that now maintained in this state under the provisions of this act, and who has been lawfully and continuously engaged in the practice of dentistry for five years or more next before the filing of his application, and is desirous of removing to this state, and shall deposit with the secretary of said dental board a duly attested certificate from the dental board of the state in which he is registered, certifying to the fact of his registration, and that he is a person of good moral character and professional attainments, and upon payment of a fee of twenty-five dollars ($25.00) may, at the discretion of the said dental board, upon a satisfactory practical examination demonstrating his proficiency, be registered as a dentist, and be granted a license to practise dentistry in this state without further theoretical examination; Provided, however, that no one shall be registered or licensed unless the state issuing the certificate to such applicant shall have extended a like privilege to engage in the practice of dentistry within its own borders to dentists heretofore and hereafter licensed by this state and removing to such other state."

Section 5495-c. Five Years' Practice Entitled To License—When. "Any person of good moral character who is a legally registered and practising dentist of this state, and has been for a period of five years preceding his application for a certificate, hereinafter described, and who is known to said dental board as such, shall upon application to said dental board and the payment of a fee of five dollars ($5.00) be entitled to receive a certificate attested by the signatures of the president and secretary of said board and the seal of said board, which certificate shall set out that the holder thereof is a person who has been duly registered and licensed to practise dentistry in the State of Missouri; that he is a person of good moral character and professional attainments, and an ethical practitioner of dentistry of this state; that he has been engaged in the practice of dentistry continuously for five years prior to his application for a certificate; and that he intends, at the time of his application for a certificate to engage in the practise of dentistry in a state other than Missouri; all of which facts shall be shown to and found by said dental board to be sufficient before any certificate herein provided for is issued; Provided, further, that the refusal of any state or of its appropriate officers to fully honor such certificate shall constitute a forfeiture by such state of all courtesies and privileges so extended under this act."

Montana: Dental Law Amended March 9, 1909. Section 1576. "Any dentist who has been in legal practice for five years or more in any State in the United States which has an exchange certificate law with that of Montana, and is a reputable dentist of good moral character and who is desirous of making a change of residence into another state, may apply to the Examining Board of the State in which he resides for a new certificate, which shall attest his moral character and professional attainments, and said certificate, if granted, may be deposited with the Examining Board of the State of Montana and said Board in exchange therefor (may) grant him a license to practise in the State of Montana. A fee of fifty dollars ($50.00) will be charged for each exchange certificate and proceeds therefrom to be paid into the treasury of the State Dental Board of Montana."

New Hampshire: Dental Act approved May 9th, 1913. Reciprocity. Section 11. "The dental board may, in its discretion, issue a license to practise dentistry without examination to a legal practitioner of dentistry who removes to New Hampshire from another state or territory of the United States, or from a foreign country, in which he or she conducted a legal practice of dentistry for at least five years immediately preceding his or her removal; provided, such applicant present a certificate from

the dental board, or a like board, of the state, territory or country from which he or she removes, certifying that he or she is a legal, reputable and competent dentist and of good moral character. And provided, further, that such certificate is presented to the New Hampshire State Dental Board within six months from the date of its issue, and that the board of such other state, territory or country shall in like manner recognize licenses issued by the dental board of the State of New Hampshire presented to such other board by legal practitioners of dentistry from this state, who may wish to remove to or practise in such other state, territory or country.

Section 12. "Any one who is a legal and competent practitioner of dentistry in the state of New Hampshire, and of good moral character, and known to the dental board of this state as such, who desires to change his or her residence to another state, territory or foreign country, shall, upon application to the dental board, receive a special certificate over the signature of the president and secretary-treasurer of said board, which shall attest the facts above mentioned, and give the date upon which he or she was registered and licensed.

Section 13. "The fee for issuing a license to a legal practitioner from another state, territory or foreign country to practise dentistry in this state under section 11 of this act shall be twenty-five dollars ($25), and the fee for issuing a certificate to a legal practitioner of this state under section 12 of this act shall be five dollars ($5), and in each case the fee shall be paid in cash before the license or certificate, respectively, shall be issued."

Nebraska: The dental law approved April 17th, 1913, contains no Reciprocity Act, but confers upon the Dental Secretaries power to recommend applicants to the Nebraska Board of Health for license to practise dentistry.

New Jersey: Sec. 6. . . . . "Said board may, in its discretion, without the examination hereinabove provided for, issue its license to practise dentistry to any applicant therefor who desires to remove to this state from another state or territory of the United States, or from a foreign country in which he or she was licensed to practise dentistry, and had conducted the practise of dentistry for at least five years immediately preceding application to said board for such license; provided, such applicant shall present proof, by affidavit or otherwise, of the facts above mentioned, and shall present a certificate from the Board of Dental Examiners or from the board or official exercising similar powers of the State or Territory or country from which he or she desires to remove,

certifying that he or she is a competent dentist or dental surgeon and of good moral character; provided, further, that such certificate shall be presented to the said board of this State not more than six months after its date of issue, and that the board or official issuing such certificate shall, in like manner recognize certificates issued by the board of this State and presented to them by licensed practitioners of dentistry of this state; and provided, further, that the Board of this State may in its discretion refuse to issue licenses under this section without examination to any person not qualified under this Act for admission to examination for license to practise dentistry. The fee for issuing any such license without examination shall be fifty dollars ($50.00), and shall be paid before the issuance of such license. The State Board of Registration and Examination in Dentistry may issue to any person known to it to be competent and of good moral character who is licensed to practise dentistry in this State, and who desires to change his or her residence to another State, Territory or foreign country, a certificate over the signature of the President and Secretary-Treasurer of said board, authenticated with its seal, which shall attest the facts above mentioned, and which shall also give the date upon which such person was licensed to practise dentistry; the fee for issuing such certificate shall be five dollars ($5.00), which shall be paid before the issuance of such certificate."

New York. The New York dental law does not mention the word "reciprocity" or "interchange," yet the following clauses indicate that interchange is legalized, although no provision is made for the departing dentist:

Section 196. Examinations, 4th paragraph, 8th line, provides: "Or else holds a diploma or license conferring full right to practise dentistry in some other of the United States, or in some foreign country and granted by some licensing board, college, school, or university registered by the Regents as maintaining an educational standard equal to that required of dental colleges of this state, or else has lawfully practised dentistry for more than twenty-five years without this state and within the United States; but the examination for those who have lawfully practised for twenty-five years in other states shall be a practical examination only."

Section 198. Licenses, 5th line. "On the recommendation of the board, the Regents may also, without the examination hereinbefore provided for, issue their license to any applicant therefor who shall furnish proof satisfactory to them that he has been duly graduated from a registered dental school and has been thereafter lawfully and reputably engaged in such practice for six years next preceding his application; or who

holds a license to practise dentistry in any other state of the United States granted by a state board of dental examiners, endorsed by the Dental Society of the State of New York, provided that in either case his preliminary and professional education shall have been not less than required in this state."

Section 198: "Every license so issued shall state on its face the grounds on which it is granted, and the applicant may be required to furnish his proof on affidavit."

North Carolina. Reciprocity, Section 17. "The said Board of Dental Examiners may, in its discretion, issue a license to practise Dentistry without an examination other than clinical to a legal and ethical practitioner of Dentistry who removes into North Carolina from another State or Territory of the United States whose standard of requirements is equal to that of the State of North Carolina, and in which he or she conducted a legal or ethical practise of Dentistry for at least five years next preceding his or her removal; provided, such applicant shall present a certificate from the dental board or a like board of the State or Territory from which he or she removes, certifying that he or she is a legally competent and ethical dentist, and is of good moral character; and provided that such certificate is presented to the said State Board of Dental Examiners within six months of the date of its issuance, and shall be recorded in the county or counties where such person proposes to practise as is provided by this Act; and provided, that the said board of such other State or Territory shall permit in like manner by law the recognition of licenses or certificates issued by the North Carolina State Board of Dental Examiners when presented to such other board by legal practitioners of Dentistry from this State, when he or she wishes to remove to or practise Dentistry in such other State or Territory."

Section 18. "Any person who is a legal, ethical and competent practitioner of Dentistry in this State and of good moral character, and known to the North Carolina State Board of Dental Examiners as such, who shall desire to change his or her residence to another State or Territory or foreign country shall, upon application accompanied by a fee of five dollars ($5.00) to the said North Carolina State Board of Dental Examiners of this State, receive a special certificate over the signature of the president and attested by the secretary-treasurer of said Board, and bearing its seal, which shall attest the facts mentioned in this chapter, and give the date upon which he or she was presented with license."

Section 19. "The fee for issuing a license to a legal practitioner from another State or Territory, as provided in this chapter, shall be twenty dollars ($20) and a fee for issuing a certificate to a legal practitioner in

this State desiring to remove therefrom, as provided in the preceding section, shall be five dollars ($5). Said fees shall be paid in cash before the license or certificate shall be issued."

North Dakota: Reciprocity clause states: "Provided, that any dentist who, for five years or more, has been in legal practice in another state of the United States having and maintaining a standard of laws regulating the practice of dentistry equal to that of this state, and is a reputable dentist of good moral character, and is desirous of removing to this state and deposits in person with the board a certificate from the examining board of the state in which he is registered, certifying to the fact of his registration and of his good moral character and professional attainments, and from the State Dental Society a written recommendation that he be admitted by reciprocity, may, at the discretion of the board upon payment of a fee of $50.00 be granted a license to practise in this state without a theoretical examination."

Ohio: Section 1324. "The State Dental Board may issue a license without examination to an applicant who furnishes satisfactory proof that he is a graduate from a reputable dental college of a state, territory, or district of the United States, and holds a license from a similar dental board, under requirements equal to those of this state, or who, for five consecutive years next prior to filing his application, has been in the legal and reputable practise of dentistry in a state, territory, or district of the United States and holds a license from a similar dental board thereof, if in either case the laws of such state, territory, or district accord equal rights to a dentist of Ohio holding a license from the state dental board, who removes to, resides and desires to practise his profession in such state, territory or district. No license shall be issued under this section unless authorized by an affirmative vote of all the members of the board present at such meeting."

Law amended 1915.

Oklahoma: Law approved March 28th, 1913. Section 14: "The Board of Dental Examiners may, at their discretion, issue license to practise dentistry, either with or without examinations, to any other dentist who shall have been in legal practice in some other state or territory for a period of at least five years, upon the presentation of the certificate of the Board of Dental Examiners of the State or Territory in which said dentist was a practitioner, certifying to the applicant's competency and a good moral character and upon the payment of a fee of twenty-five dollars; provided, however, that the State from which

such practitioner may come shall have obtained equal standard of laws regulating the practice of dentistry and will accord equal privileges to the practitioners of the State of Oklahoma.

Section 15. "Any duly licensed dentist in the State of Oklahoma who is desirous of changing his or her residence to that of another State or Territory, shall upon application to the Board of Dental Examiners, and upon the payment of a fee of five dollars, receive a certificate which shall attest that he is a duly licensed dentist of the State of Oklahoma."

Pennsylvania: Section 2, 4th Paragraph, Dental Law, 1907. "Upon the recommendation of the Board of Dental Examiners, the Dental Council may also issue a license, upon the payment of a fee of twenty-five dollars, to any person who is of good moral character, and who shall furnish proof that he or she has a license to practise dentistry granted by the Dental Council or other lawfully constituted authority, of any other state of country where the preliminary and professional education required by law is equal to that provided by the laws of this Commonwealth."

'The Dental Council may also license any applicant who has been in the actual, lawful practise of dentistry for not less than ten years upon the report of the Dental Examiners that, after due investigation or examination it finds his or her education and professional attainments and experience to be, together, fully equal to the requirements for license in this Commonwealth."

"Every license, issued, otherwise than as a result of a written examination, shall state the grounds upon which it is granted."

Tennessee: Section 18. Dental Reciprocity. "Any dentist who has been in legal practice for five years or more and is a reputable dentist of good moral character and who is desirous of making a change of residence to this state may apply to the Examining Board of the State in which he is registered (provided such state requires diplomas and examination for registration), for a certificate of recommendation, which shall attest to his moral and professional character, and such certificate, if granted, shall be deposited with the Board of this State at least within six months from the date of its issuance, and the State Board in exchange therefor may grant him a license to practise dentistry upon his paying to the Secretary and Treasurer of the Board the fee herein required."

Section 19. Reciprocity. "Any one who is a legal, ethical and competent practitioner of dentistry in the State of Tennessee and of good moral character and known to the Board of Dental Examiners as such, who shall desire to change his or her residence to another State or Terri-

tory, or the District of Columbia, or foreign country, shall upon application to the Board of Dental Examiners, receive a special certificate over the signature of the President and Secretary of said Board and bearing its seal, which shall attest the facts above mentioned and give the date upon which he or she was registered and licensed."

Section 20. Reciprocity Fees. "The fees for issuing a license to a legal practitioner from another state, as provided for in section 18 shall be fifteen dollars ($15.00), and the fee for issuing a Certificate to a legal practitioner in this state as provided for in Section 19 shall be five dollars ($5.00) and in each case the fee shall be paid in cash before the license or certificate shall be issued."

Utah: Dental Act Approved March 11, 1909. Section 14: "The board may at its discretion, issue a license without examination, to any applicant who furnishes satisfactory proof that he is a graduate from a reputable dental college and holds a license from a Dental Board of any other State, Territory, or District of the United States, under requirements equal to those of this state, or who for five consecutive years next prior to filing his application has been in the legal and reputable practice of dentistry in any other State, Territory or District of the United States and holds a license from a similar Dental Board thereof, if in either case the laws of such State, Territory or District accord equal rights to a dentist of this State, who removes, or resides, and desires to practise his profession in such State, Territory or District. No license shall be issued under this section unless authorized by an affirmative vote of the majority of the members of the Board. (Fee, $25.00.)

Section 15. "Any reputable dentist of good moral character, who has been in the legal practice of dentistry in this State for five years or more, who desires to change his residence into another State, Territory, or District of the United States, may apply to the board for, and said board may grant to him, a certificate attesting his moral character and professional attainments. (Fee, $5.00.)"

Vermont: From the Dental Law of 1904, amended Dec. 31, 1912. Section 9. Reciprocity. "The board of dental examiners may without examination issue a license to practise to any dentist who shall have been in legal practice in some other state or territory for a period of at least five years, upon the certificate of the board of dental examiners or a like board of the state or territory in which such dentist was a practitioner certifying his competency and that he is of good moral character; and upon the payment of twenty-five dollars."

Section 10. "Any duly licensed dentist of this state who is desirous

of changing his residence to that of another state shall upon application to the board of dental examiners receive a certificate which shall attest that he is a duly licensed dentist in the State of Vermont. The same shall be given without fee."

Virginia: The Virginia Dental Law as amended March 27, 1914, eliminates the Reciprocity Act. Nevertheless, it declares in Section 3, paragraph (b): "Said Board shall have full power to make by-laws and necessary regulations for the proper fulfilment of their duties under this Act."

West Virginia: Dental Law in effect May 22, 1907; amended July 1st, 1915. Section 13: Dental Reciprocity: "Said board may, at its discretion, after an oral or clinical examination, issue a license to practise dentistry to a legal and ethical practitioner of dentistry who removes to West Virginia, and in which he or she conducted a legal practice of dentistry immediately preceding his or her removal; provided such applicant shall present a certificate from the dental board, or a like board of the State or Territory from which he or she removes, certifying that he or she is a legal, competent dentist, and of good moral character; and provided further, that such certificate is presented to the West Virginia State Board of Dental Examiners within six months of its date of issue and that the board of such other State or Territory shall permit in like manner by law the recognition of licenses issued by the West Virginia State Board of Dental Examiners when presented to such other board by legal practitioners of dentistry from this state who may wish to remove to or practise in such other State or Territory."

Section 14. Reciprocity On Leaving The State. "Any one who is a legal or competent practitioner of dentistry in the State of West Virginia, and of good moral character, and known to the Board of Dental Examiners as such, who shall desire to change his or her residence to another state or territory or foreign country shall, upon application to said Board of Dental Examiners, receive a special certificate over the signature of the president and secretary of said Board and bearing its seal, which shall attest the fact above mentioned in paragraph thirteen, and give the date upon which he or she was registered and licensed."

Section 15. Reciprocity Fees. "The fee for issuing a license to a legal practitioner from another state, as provided in paragraph thirteen, shall be fifty dollars; and a fee for issuing a certificate to a legal practitioner in this state, as provided in paragraph fourteen, shall be five dollars, and in each case the fee shall be paid before the license or certificate respectively shall be issued."

Wisconsin: Amended Dental Law 1909. Section 4: "The state board may, without examination, issue a license to any applicant therefor who shall furnish satisfactory proof, said proof must be deposited in person with the secretary of the state board of dental examiners of this state, that he has been duly licensed to practise dentistry in some state other than Wisconsin, and that he has been lawfully and reputably engaged in said practice for five years next preceding his application; provided, however, that the state recommending such applicant requires a preliminary education required in this state, and provided the state in which he lives extends to the dentists of this state, who may remove to said state, a similar privilege of practising without examination; provided, however, that if a dentist who is licensed to practise in this state removes to another state and engages in the practise of dentistry there, he shall have his name carried on the list of dentists of this state upon the payment of the annual registration fee while out of this state. The fee for such license shall be twenty-five dollars."

Wyoming: Law amended 1915. Reciprocity: Section 10: "Said Board may, in its discretion, accept and register upon payment of the registration fee, and without examination of the applicant, any certificate which shall have been issued to him by the Dental Examining Board of any State or Territory of the United States; provided, however, that the legal requirements of such Dental Examining Board shall have been at the time of issuing such certificate in no degree or particular less than those of Wyoming at the time when such certificate shall have been presented for registration to the Board created by this act; and provided further, that the provisions in this section contained shall be held to apply only to such of said Dental Examining Boards as accept and register the certificates granted by this Board without examination by them of the ones holding such certificates. Each applicant, on making application, shall pay to the Secretary of said Board a fee of twenty-five Dollars, which shall be paid to the Secretary of said Board."

SUGGESTIONS FOR ACCURATE PREPARATION FOR PLATE WORK

By Victor H. Sears, D.D.S., Camp Beauregard, Louisiana
(third paper)

FULL UPPERS AND LOWERS

1. In order to register the bite for a full upper and lower case, a flat modeling compound occlusal plane is built upon the upper compound impression tray. The occlusal plane thus built should not extend back of the region of the first or second molar.

Fig. 19

2. With the upper compound impression in position the lower impression is taken, allowing the patient to bring the tray up against the occlusal plane of the upper. The Supplee occlusal plane tray is well suited to this purpose because it is flat and will, therefore, conform to the flat occlusal plane of the upper. If this kind of tray is not used, the occlusal surface of the lower compound impression should be flattened to correspond with the upper occlusal plane, and three notches cut in the compound (Figure 19).

3. Next, the upper occlusal surface is softened to a depth of about one-eighth inch. The impressions are seated to position and the patient told to bring the lips together and swallow. In closing, the soft compound of the upper occlusal plane will fill into the notches cut on the occlusal plane of the lower so that the bite is definitely recorded. The lower occlusal plane should be oiled to prevent the soft compound from

adhering to the lower compound. Test the bite by the same method as that used for single cases by having the patient snap the two occlusal surfaces together.

4. The lower impression is first completed as though there were opposing teeth in the upper jaw. The notches cut in the lower occlusal plane serve the purpose of teeth in completing the impressions. When the lower impression is completed, the upper one is finished as though there were opposing teeth in the lower jaw.

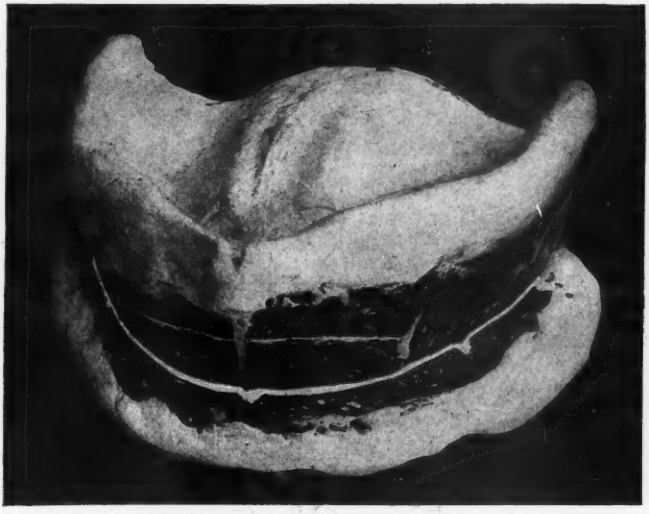


Fig. 20

5. The steps for taking the bite and impressions for a full upper and lower are as follows:

(1) Take the upper impression in compound.
(2) Scrape all hard areas and remove the compound from the tray.
(3) Build occlusal plane on upper compound impression tray.
(4) Take lower impression in compound with upper impression in place.
(5) Scrape hard spots.
(6) If ordinary tray is used, remove the tray, form flat occlusal plane to correspond to the upper plane, and cut notches in lower.
(7) Heat occlusal plane of upper and take the bite.
(8) Test the bite.
(9) Correct buccal margin of the lower under contraction of masseters and dam the lingual margin against leaks.

(10) Muscle-trim and post-dam the upper impression. Mark centre-line and make any other markings on the compound.

(11) Complete lower with plaster wash under slight biting pressure.

(12) Complete upper with plaster wash under slight biting pressure.

(13) Outline hard areas on impressions and relieve them.

(14) Paint impressions with thin solution of sandarach varnish and set them together (Figure 20).

6. Remember that the tendency is to take the bite for full uppers and lowers with the jaws too far apart. It is better to let the jaws come too near together than to have them separated too much.

PARTIALS

1. If there are no extreme undercuts, it is possible to complete partial impressions using the plaster wash with the same technic as that employed for full cases. A number of operators are getting very good results in this way. However, a medium-fusing compound such as Kerr's can be used successfully for all types of partial cases without the use of plaster.

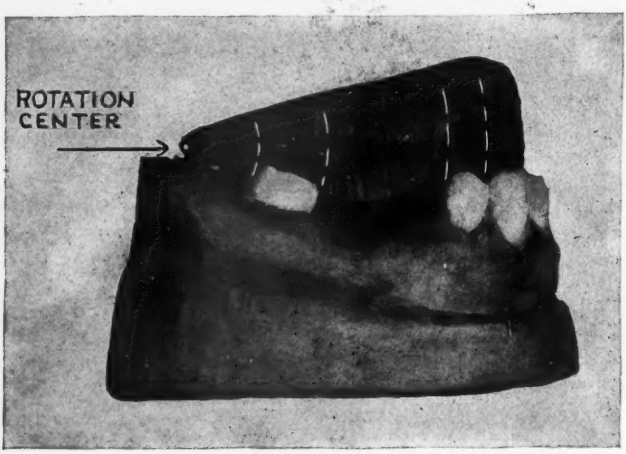


Fig. 21

2. Mr. Supplee has issued a booklet, "Partial Impressions with Mouth Closed." The subject is so well treated there, and in other places, that it is not given here.

3. The theory of taking advantage of undercuts is shown in Figure

21. It will be seen that by withdrawing and inserting the impression as shown by the dotted lines it is possible to use the mesial surface of the molar to hold the denture in position. Dovetail spaces and bell-shaped teeth can thus be used to the greatest advantage.

Upon placing the trial plates in the mouth it will sometimes be found that they do not come together exactly as they did on the articulator. This is due to the fact that the bite was not perfect, or that the laboratory technic was faulty, and it will be necessary to correct the error at this stage if the finished dentures are to be serviceable.

It will be noticed that one or two points strike first as the patient brings the jaws together. As the jaws are further closed the trial plates will shift on the tissues enough to allow the teeth to slide into the same relation they were set to on the articulator, or one of the trial plates will be dislodged. In either event there is a strain on the tissues and muscles which would interfere with the success of the dentures. The method described below is for the correction of the bite on a full set of dentures, but the principle is the same for single cases and for partials. It will be found especially helpful in partials where it is not possible to obtain a test bite with the jaws at their proper distance apart.

Before correcting the bite make any necessary changes for aesthetic reasons.

Adjust the chair so that the patient is seated in a comfortable, upright position, and insert the trial plates. The head must be tilted neither forward, backward, nor to one side, or the weight of the mandible will cause an abnormal relation. Instruct the patient to bring the trial plates slowly together until the teeth just make contact. At the moment of contact the bite is unstrained. Have the patient bring the teeth several times to the point of contact without bringing any pressure to bear. The patient should be impressed with the fact that you are going to register the position of the jaws at rest.

When you are certain that the head is in the correct position and that the teeth are in contact without pressure, instruct the patient to leave the lips relaxed and hold the jaws in position until you have registered the relation.

Insert a small piece of very soft modeling compound (low fusing) into one corner of the mouth and push it back toward the molar region without making any pressure against the trial plates.* Then carry another piece to the opposite side in the same way. If the compound is soft enough it will flow into the proximal spaces under the natural pres-

*The bite-lock tray described in "Professional Denture Service," page 151, may be used to advantage here.

sure of the relaxed cheeks. It is not advisable to try to chill these pieces until they have passed from the flowing into the bending stage, because the cold water or cold air will sometimes cause an unconscious movement of the mandible.

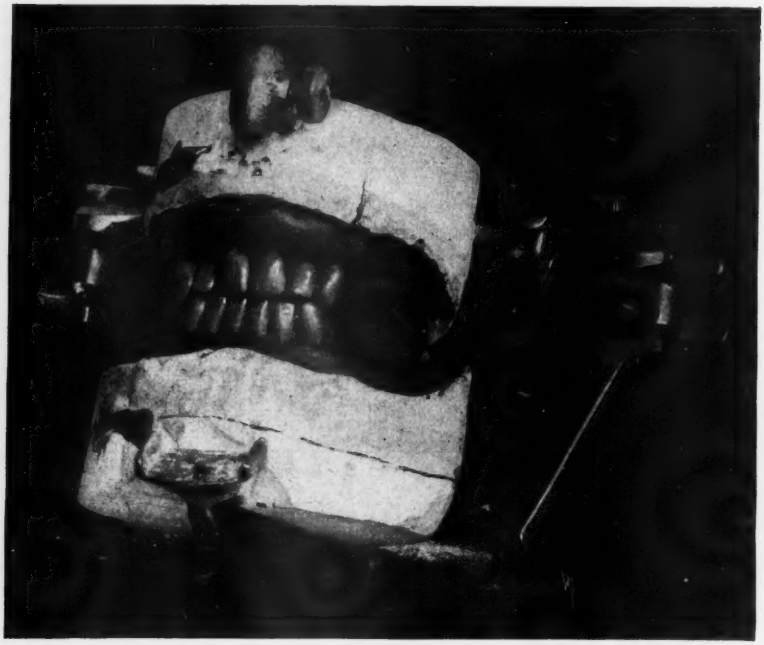


Fig. 22

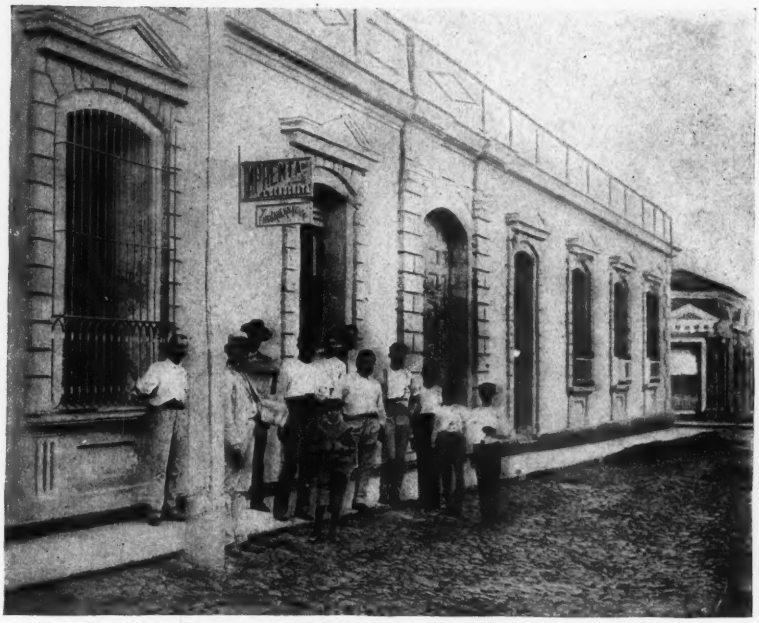
Remove the compound locks and drop them into cold water until they are thoroughly chilled.

Dry the trial plates and the compound locks. Now fit the two compound locks into position on the trial plates (Fig. 22), seal them all together with sticky wax, remove the lower cast from the articulator, and mount it in its new relation as shown in the photograph.

PRACTISING DENTISTRY IN MEXICO, CENTRAL AND SOUTH AMERICA

By Paul S. Coleman, D.D.S., Wilburton, Oklahoma

The dentist, doctor, or druggist who is contemplating the practise of his or her profession in Latin-America is always seeking information of a reliable character, and the purpose of this article is to convey to you exact information as regards this particular section of the globe. First, however, let me say to you physicians and druggists who are graduates of the most reputable schools in the United States of North America, that unless you are employed by some railroad, steamship



Picture of local newspaper office. Your dental office will usually be in just such a corner building as this

company or other company having special privileges, the attempt to secure a license in any of the southern republics is simply wasting time.

Our medical and pharmacal colleges are not considered the equal of those in Europe, and one of the main requirements is that you pass a part of your examination in French, which is almost impossible for the average American practitioner. The exact course to my mind, however,

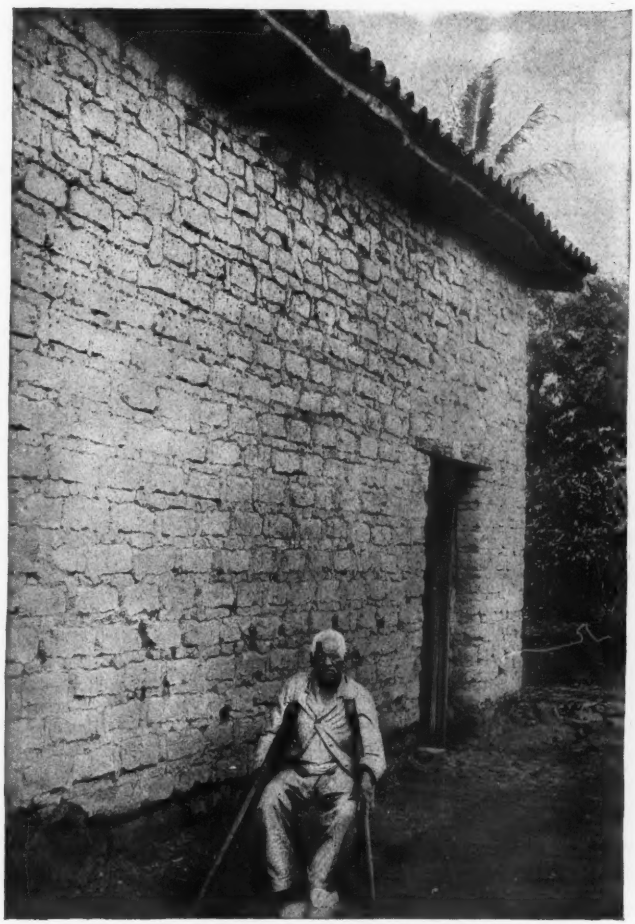
is that these republics all have medical and pharmacal colleges, and the terms are seven and four years each, but before you are permitted to enter upon your studies you must at least be a master of arts, which is really a scarce article among the profession in North America. It matters nothing how much or how little we think the people in those republics know; the real fact of the matter is the physicians and druggists are men of culture and education, and they do not propose to have any half-baked members of these professions in their midst.

However, my private opinion is that I would rather have a two-year undergraduate from the lowliest of American colleges for my physician,

A street scene in San Salvador

for the simple reason that Americans possess an unusual amount of common sense. I recall an incident in the city of Zacapa, in Northern Guatemala, where a French lady was one day stricken with a violent case of convulsions, ending up by becoming rigid and unconscious, with the heels and back and shoulders only touching the bed, being bent like a bow. The native physician was called in; he took a look, went back and got a medical book and brought it out and took another look, and finally found an illustration with an identical case illustrated, after which he proceeded to lecture those in attendance, I being one of the number. He made no immediate effort toward relief, and finally someone suggested calling the railroad doctor, who was really a druggist practising in the absence of the company physician. The druggist also took a look, got out his hypodermic syringe and gave an injection, which he repeated in a few moments, this resulting in the immediate recovery of consciousness and an uneventful recovery several days later with subsequent treatments.

This is only one case and is given to convey to you an idea of what the average native practice qualifications are, but you Americans cannot practise in Latin-America, even if there are many excellent openings, and your German, French, and Italian brothers can, and without undue



A type of Honduras dwelling and its aged owner

hindrance. The state department officials at Washington could easily remedy this matter, but they have never had time.

With the dentist it is different. These republics have scarcely any dental colleges. Good dentists are scarce. If you are a graduate of any American college you can, in any of the republics, present your

diploma and are given six months to learn the language. You preferably go to the sticks or inland cities, and you usually make money fast right from the start. Hundreds of one and two-year Americans are in those inland towns getting rich, and without licenses, but are unmolested because they are doing fairly good work and doing a real service for the people. However, you want to place your office in the largest of the cities, where you learn the language, after which you must pass an examination which is usually not extremely hard, and then you must write a thesis in Spanish, after which you are issued a license. When

Coffee plantation in Central America

you once receive a license in one republic you only have to present it in another republic and you have smooth sailing and are joyfully welcomed.

Your fees are high and you invariably make money fast, and the openings are excellent and the social position is also excellent. I have personally investigated four-fifths of the countries below the Rio Grande, and you may rely upon this as being reliable information, and applying with slight variation to all. In addition, if you are a cosmopolite and single, and know several languages, you are far better situated, because when you get outside of the United States and know only one or two languages you are considered very gross and uneducated, especially so if you do not happen to have a fair knowledge of French.

THE HISTORY OF THE DENTAL EDUCATIONAL COUNCIL OF AMERICA AND THE CLASSIFICATION OF THE DENTAL COLLEGES OF THE UNITED STATES

By Henry L. Banzhaf, B.S., D.D.S., Milwaukee, Wis.

CONTINUATION

[Through error the following portion of the article appearing under the above title in the December issue of the Dental Digest was omitted. The information in this portion is important, and is necessary to properly complete the article and we regret that it did not appear as the proper ending of the December article.—Editor.]

The advance information which I have in my possession indicates that it is the purpose of the Government to adopt the curriculum of the Educational Council. The War Department having increased the quota of the Dental Corps to one dental officer to 500 soldiers instead of one dental officer to 1,000 soldiers as heretofore, and the establishment of the Students Army Training Corps, the changing of the curriculum and putting it on a basis of three terms of three months each to the year, are all a part of the big movement in the evolution of dentistry.

After the program upon which we are now engaged is disposed of, the next step will be the classification of State Dental Examining Boards, as suggested by Colonel Wm. H. G. Logan, M. C., N. A., in his address, as President of the National Dental Association, before the House of Delegates. This is a logical next step, and one which will not only go far to standardize dental education in this country, but which will harmonize the activities of the various National bodies.

The dental profession, as it stands to-day, has come to realize better than ever before that it has a duty to fulfill, a task to perform, and an ideal to reach. We are not isolated factors in the marvellously complicated social life of the nation. We are co-operatives in the great movement of the day for higher and saner thinking, for healthier and cleaner living, for more just and honorable acting. We must have a larger measure of that professional and business efficiency upon which the world is now putting so large a premium. We must not trail the procession of the professions. We cannot stand still when the whole world is ceaselessly moving under our feet. The world war has, among other things, developed a broad and strong spirit of altruism in all the professional ranks, which we cannot fail to recognize and welcome. This Council feels that it must take cognizance of the growing light by wise, determined and fearlessly honest action in regard to the bettering of

dental education in its academic, legal, and professional aspects. To this end it will continue to encourage the dental schools in their aspiration to higher things, will support the State Boards of this country in their endeavor to protect the public and the profession, and will unite in an effort to give the nation the best and most generous service within its power.

NATURAL TEETH WITHOUT ROOTS

By Archibald R. Gardner, D.D.S., New York, N. Y.

An interesting and what I believe to be unique case of natural teeth, upon which the roots were so incomplete as to be practically absent, presented in the form of a 16 year old boy of good size and apparently in good health. He was brought to the office by his father who said that the

boy's teeth were all coming loose and asked that something be done to preserve them.

An examination showed that fourteen natural teeth, with practically perfect crowns, remained in the mouth. The other teeth had been lost, but without any knowledge by the patient or the parents that they were unusual in any way.

To test the degree of looseness in teeth apparently so perfect, slight pressure was applied to the crowns in different directions. They moved with a freedom which seemed to show that there was no process about them. As the amount of movement was too great to permit their retention in fixed positions, and as it was evident that no process could develop while such extensive and continuous movement existed, it seemed necessary to advise extraction. The first tooth was extracted with such ease

as to prompt an immediate examination, which showed that the root was merely rudimentary. This was found to be the case with the other teeth, the roots all being as shown above.

No record of a parallel case has so far been found.

29 WEST 34TH ST.

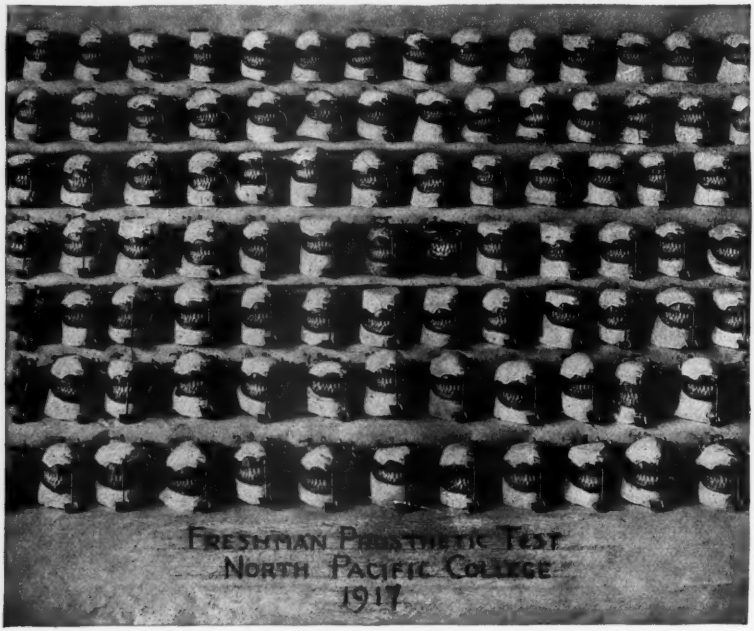
THE BATTLE OF THE AGES

The love of the Eternal for mankind, and for all other forms of life, is not a parental love—not the love of a mother for her child, or of the father for his son—it is more like the love which a general has for his army; he is to lead that army through hardships, through struggles, through sufferings, and through death, but he is leading it to victory. Many will perish that others may live; the battle is being won daily. Evolution has triumphed. It has been a long and desperate battle, but here we are and we find life sweet. The antagonistic forces have been overcome, have become sources of power. The vast army of living forms moving down the geologic ages has been made strong through the trials and obstacles it has surmounted, till now we behold it in the fulness of its power with man at its head.—JOHN BURROUGHS, *North American Review.*

TEST SET UP BY FRESHMEN AND SOPHOMORES, NORTH PACIFIC COLLEGE, PORTLAND, OREGON

These photographs were taken after one of the test set-ups given Freshman and Sophomore classes at North Pacific College at the close of one of the quarterly examinations.

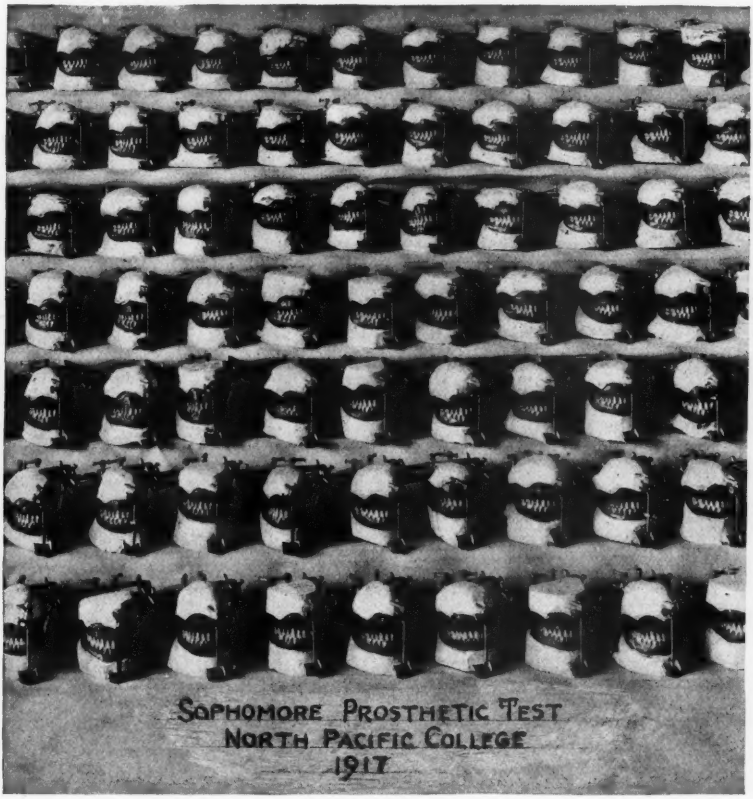
These tests are conducted as follows: The student enters upon the test exercise with casts mounted upon a Gysi Simplex Articulator without the use of the face bow, the base plate composition with wax rims in position and all necessary instruments and materials to complete the work to the stage of trying in the mouth in the wax.



The time given for these tests is four hours, which is sufficient time to indicate the ability of the student. Work is graded on the following points:

Relation of teeth to alveolar ridge	30.
"Working" bite	20.
"Balancing" bite	20.
"Incising" bite	20.
Neatness	10.
	100.

We insist that the teeth be ground with carborundum or copper carbo powder mixed with cocoa butter, which must be done on the articulator. This is considered so important that teeth not so ground are penalized 40 per cent. We require the students to use "Trubyte" teeth to promote high ideals, as this cannot be accomplished when mediocre or low grade materials are used.



ENLARGED THYROID DUE TO IMPACTED THIRD MOLAR

By A. B. French, D.D.S., Pittsburgh, Pa.

That local irritation may be the cause of an enlarged thyroid gland is indicated by the history of the following case:

Patient, male, age 22, weight 130 pounds, height five feet eight inches; presented September 14, 1917, for relief from pulpitis in upper right second bicuspid.

In making general survey of the mouth I noted the presence of all the third molars, except the lower right which was not in evidence.

The extensively enlarged (interfered with speech) gland being on the right side, led me to suspect a possible connection between the two.

Advised patient to call the attention of his physician to it, and see what he thought about it.

As might have been expected, physician scoffed at the idea of any possible connection giving the accepted causes, and so forth.

No improvement being noticeable under general treatment, and being encouraged by reference to the subject in an article by Dr. Cryer, I persuaded patient that inasmuch as it ought to be removed anyway and could not possibly do any harm, we take a chance in hope of benefiting the thyroid trouble.

Accordingly, on October 26, 1917, I removed the tooth.

Improvement in the patient's general condition was noticeable in ten days, and in six weeks there was a marked decrease in the size of the enlargement, treatment by physician having been discontinued from time of extraction.

At the present time, fourteen months after extraction, the enlargement can only be noticed by the closest observation and would not be suspected except for the knowledge of its previous existence.

Patient is satisfied the tooth was the cause, which, of course, proves nothing.

All I myself am sure of is the correctness of the facts heretofore stated. To sum up: Where he had an impacted lower right third molar and an enlarged right thyroid gland, the latter disappeared following the removal of the former.

1026 Highland Bldg.

PREPAREDNESS LEAGUE OF AMERICAN DENTISTS

EXPANSION OF THE LEAGUE

Our League has made a permanent place for itself. It has proven its usefulness to the dental profession and its necessity to the welfare of humanity. Its field of operation reaches wherever organized dentistry exists, and its public service may be felt to the extreme limits of civilization. Such is a brief outline of the field of our future endeavors.

In expanding the activities of the League, we desire, however, to lay down the following unvarying rules and principles that any misconception of our aims may not occur:

1. The principle of the League is Service to Humanity.
2. Politics or promotion of personal interests *shall not be tolerated.*
3. It is essentially an organization for public health service.
4. Its activities shall not conflict with other dental organizations in any way.
5. Its object shall be the co-ordination of all professional and public agencies which may thereby render better service for the common welfare of humanity.
6. No officer or member of the League shall receive pay for services unless of such character as to be justifiable, but not without proper action by a quorum.

These principles must be strictly adhered to or the organization cannot live.

At a meeting of more than one hundred dentists at the Royal College of Dental Surgery, Toronto, Ontario, on Dec. 19, 1918, a resolution was unanimously adopted for the appointment of a committee of Canadian and American dentists to meet in Buffalo, Jan. 11, 1919, to formulate plans for an international organization, using the League plan as the basis of procedure. Our members will be informed of the results as early as possible and final action will not be taken without the approval of those interested.

The wonderful power for good of such an organization cannot be estimated. It must be truly democratic and ever ready to extend a helping hand wherever our rightful province may reach. It is impossible to outline the possibilities in a few words, but I refer you to the editorial by Dr. Kirk in the December *Dental Cosmos*; also that by Dr. Ottolengui in the December *Dental Items of Interest.*

The great opportunity for the dental profession is at hand, and a magnificent work is before us. We will accept the responsibility, with the Golden Rule as our guide, and endeavor to prove faithful to the trust. Big things are before the American public to-day. We must rise to the occasion and think big, act big and DO big. It is up to us to see that our profession keeps pace with the leaders.

INSTRUCTION IN POST-BELLUM ORAL SURGERY AND PROSTHESIS

The course of instruction given at the Royal College of Dental Surgery at Toronto in December last, was the first one given in conjunction with the League and without doubt it proved to be the best course given thus far.

The splendid faculty was composed of Lieutenant-Colonel Guy Hume and Major E. W. Cummer, representing Canada, and Arthur E. Smith, D. D. S., M. D., of Chicago, and Leroy S. Miner, M. D., D. M. D., Boston, representing the United States. This arrangement gave the meeting international significance and did much toward bringing about better relations of the profession on both sides of the border.

The Military was largely represented in the class numbering one hundred and four. Colonel Clayton, Dental Surgeon-General of Canada; Colonel W. H. Thompson, Commandant for Ontario, and several other provincial commanders were present, together with Deans Thornton of McGill University, Dubeau of Duval and Webster of the Royal College. From the States came State Director Hallenberg, North Dakota; State Director McIntyre, Rhode Island; two League members from Nashville, Tenn., and many others scattered about the border States. Director General Tracy as well as President Beach also were present to aid in making the gathering a great success. Great credit is due Dr. Wallace Seccombe for his efforts in making necessary arrangements. The course stands in a class by itself and has set a standard for the League to strive to maintain.

The League wishes it distinctly understood that this is not a post-graduate course. It is to be known as a course of instruction in post-war oral surgery and prosthesis, to which it will be strictly confined. Bearing this fact in mind, one week of instruction is ample to cover the field, except in special cases.

The course to be given in New York early in February will essentially have the same faculty. It was difficult to secure Colonel Hume and Major Cummer, but this has been brought about through the courtesy of Colonel Clayton and Colonel Thompson. We are deeply indebted to these gentlemen for their sympathetic co-operation in this splendid work.

The League hopes to pursue this object until the States and Canada have been well covered and our members are prepared to render efficient service to our injured soldiers. The fee of $50 is divided equally among the instructors, after necessary expenses have been met, the League or the collaborating institution receiving nothing whatever.

If you are not a member of the League—join now—we need you and you need us.

J. W. BEACH, President.

FUTURE WORK OF THE LEAGUE

Although organized as a war emergency measure, conditions have so changed that there is a definite call for the League in a broader and more embracing sense. In fact, those who rightly read the signs of the times are united in the belief that the fullest usefulness of the organization is yet to come.

The identity of the League will, no doubt, be absorbed by the broader conception and we will be big enough to take up service for our profession throughout the allied nations. Should not the dentists of the United States and Canada, who have in reality gained greatly by the war, give every possible assistance to our brothers who have suffered loss of practice, home, money and even worse? Is there not a call to you through professional sympathy and the brotherhood of man to come forward in this, their hour of darkness and need, and stretch forth a helping hand? Can you compute the wonderful influence thereby exerted toward establishing bonds that will live for all time?

Let us see the vision and act without delay. Let us keep alive the great principle upon which the League was founded and which has made it so great a power for good. Our National Dental Association needs such an organization to forward public service work in its name and to do such service for the welfare of the people as cannot be accomplished by a society whose activities are purely scientific in character. We must remember that the old order of things has been completely changed by conditions beyond our control, therefore let us quickly adjust ourselves

accordingly and meet these new conditions as we have so successfully met everything thus far.

Before this message shall have reached you, it is the hope of the officers of the League that this matter shall have crystallized and definite plans have been formed. We wish to call your attention to the excellent editorial in the December *Cosmos* which should be read by every member of the League. The outline of our future possibilities so well stated by him should receive careful consideration from the profession and any suggestions will be gladly received at League Headquarters.

The above is merely a suggestion of one of our future activities but there are others of local as well as of general significance to be considered which will make the League more useful than ever.

OUR HOME SERVICE WORK

Director-General Tracy has sent a letter to all State Directors to cooperate with the Home Service Section of the Red Cross in caring for the families of soldiers and sailors in need of dental treatment. All members of the League are requested to take up this splendid work and by communicating with your State Director you will be given neccessary instructions. Let us make a record that we will be proud of.

SEND IN REPORTS

All our members are earnestly requested to send in all reports of free dental service to the New York Headquarters. Hundreds of thousands of such operations have not been reported.

How many have you failed to report?

LANTERN SLIDES

Those holding one or more sets of the lantern slides sent out from Headquarters last winter, will kindly communicate with the President and state whether it is desired to retain them or return them.

PRACTICAL HINTS

This department is in charge of Dr. V. C. Smedley, 604 California Bldg., Denver, Colo. To avoid unnecessary delay, Hints, Questions, and Answers should be sent direct to him.

SEPARATING THE TEETH.—When a great deal of separation is needed, partially excavate the cavity and pack very firmly with cotton saturated with chloropercha. It may remain two or three weeks if needed. The teeth will be well separated, the cavity easy of access and perfectly protected for the time being by the chloropercha, while the cotton cannot become foul.—*Dominion Dental Journal.*

A MOST EFFECTIVE STYPTIC.—The most effective styptic known to the writer, for obstinate cases of hemorrhage after the extraction of a tooth or root, i. e., cases that will not respond to the more usual remedy such as adrenalin, will be found in the formula of Dr. J. P. Buckley, known as Phenol-Sulphonic Acid. A pellet of cotton wet with the acid and inserted into the root socket will cause an almost instantaneous cessation of hemorrhage without causing any discomfort to the patient, and will be found to be perfectly harmless even if left in the root socket for twenty-four hours.—*Dental Review.*

BASSWOOD FOR COUNTER DIE.—As a counter die for stamping gold plate over small fusible metal dies in crown and bridge work, procured a piece of inch basswood board and cut it in pieces say two or three inches wide by five or six inches long. Roughly form the gold over the die, and drive it on with an ordinary hammer, using the end grain of the basswood against the gold. The gold is properly stamped in five seconds. Saw the stamped end of the basswood block off as needed. Basswood is fine grained, soft, does not split easily and stamps the gold true.—*Oral Health.*

TO PROTECT SYNTHETIC CEMENT FILLINGS FROM THE SALIVA.—Instead of using wax or the varnish supplied by the manufacturers, use ordinary surgical collodion; it is cheaper and better.—*Commonwealth Dental Review.*

[The following is a continuation of the questions asked by Lieut. R. C. Hughes relative to the work of the Denver Inlay Unit, the first of which was published in the November issue.]

Editor of Practical Hints:

Question No. 2.—How do you prevent an open joint at the gingival in the finished inlay?

ANSWER.—To prevent an open joint at the gingival: Prepare cavity with a beveled margin. Confine the wax with a matrix at the gingival. A hand matrix, consisting of a thin-bladed spatula shaped to pass into the approximal space below the contact point is convenient to use for this purpose. With a firm pressure upon the handle, a wedging force can be exerted that will actually separate the two teeth slightly, confine the wax at the gingival border of the cavity and permit at the same time an accurate impression of the contact surface of the approximating tooth. Now a wedge-shaped piece of cast wax should be taken, just the end of it softened, leaving the main body of the wax cold to act as a plunger as slow, steady firm thumb pressure is exerted directly against the gingival seat of the cavity. This pressure should be maintained for at least a minute, or until the wax has come gradually to the temperature of the mouth. If occlusal portion is incomplete, flow some wax into this portion with a hot spatula and confine again under pressure. I invest as soon as removed from cavity.

Question No. 3.—What investment material do you use and why?

ANSWER.—In order to get the best results in inlay casting it is very important that the investment material used should be both compounded and manipulated just right. All of the very finely ground investments while they may give the desired smooth surfaces, still lack sufficient strength to assure uniformly satisfactory results. Most of the coarser investments will not produce that smooth satiny finish that we have been able to show. Also many investments contain low fusing ingredients which actually melt, permitting the fused gold to penetrate into the spaces or pores thus provided. We have adopted Taggart's investment and follow very accurately the directions given by him for mixing.

Question No. 4.—How long should invested wax models set before burning out, and is it all right to burn them out over an open flame? How do you know when to stop burning-out process? Do you cast into cold molds?

ANSWER.—Invested models should not be allowed to set for days or

even hours before burning out, but should be placed in an oven at a low heat as soon as the excess will crumble and not smear when cut off with a sharp knife, usually about twenty-five minutes. This burning-out oven should be so constructed that the flame does not come in direct contact with the investment or flask, thus causing a warpage by overheating any part of the investment.

The heat should be gradually increased until the wax has ceased to volatilize, but not continued until all carbon residue has been burned out. There should be a decidedly smoky color in the floor of the crucible at time of casting. Always molds should be permitted to come gradually to room temperature before castings are made.

Question No. 5.—What casting machine should be used? Is the ordinary city gas all right to use for casting? What sized nugget should be used? Is there danger of getting the gold too hot? What heat do you recommend? What makes the molten gold nugget sometimes appear to bubble or boil?

ANSWER.—Use any machine with which you can exert a uniform measured pressure (five pounds). Use a flame for melting the gold with which a large nugget can be brought to a highly molten state in a few seconds. You should always have at least three dwt. of gold left in the crucible after casting. Gold boils at a temperature 2,500 degrees above the melting point of platinum, so you are not apt to get your gold too hot. The oxy-acetylene gas provides the hottest flame known to science and is most satisfactory for casting gold inlays. If the gold appears to boil it is due to the agitation of the molten mass by the force of the blast of the flame thrown upon it from the escape of gases from the mold, because of incomplete burning out of the wax, or because of the disintegration of some of the ingredients of the investment. All of these statements apply, of course, to pure gold only.

Editor of Practical Hints:

Being a subscriber to the DENTAL DIGEST, I would like to ask you to furnish me with name of some reliable publication on removable bridge work.

Thanking you for same.—J. A. ROGERO.

ANSWER.—Peeso's: Crown and Bridge Work. Chayes: Movable Removable Bridge Work. Nesbet: A Simple Form of Removable Bridge

with Cast Clasps. Article in *Dental Summary*, March, 1918. In my judgment this is decidedly preferable to the other more complicated forms.—V. C. S.

Editor of Practical Hints:

Can you inform me through the DENTAL DIGEST of a manner for devitalizing an anterior tooth, and a root canal filling that will not turn the tooth dark? I have seen some teeth turn a dark black-green after removing the nerve with arsenic treatment. What bleaching agent is recommended for bleaching an anterior tooth that has darkened from devitalization? Or can they be successfully bleached?—C. W.

ANSWER.—Never devitalize unless pulp is diseased. If you must do so, use cocain and pressure anaesthesia, ream canal out well, fill apical third with eucapercha and guttapercha cone thoroughly condensed. Fill remainder of canal with Flagg's Oxychloride cement, with guttapercha cone in centre, for greater ease of removal, if canal should ever need to be reopened for a crown post or for any other reason.

Pyrozone (25 per cent. hydrogen peroxide). To apply: Be sure that apex is sealed. Place dry cotton in open part of canal and in pulp chamber; seal with temporary stopping; with a hot plugger drive a small hole through centre of stopping to cotton. Take tube of pyrozone (which is extremely volatile), hold in towel saturated with ice water and break off tip of tube with plyers. Take long thin operating plyers, and carry liquid between closed beaks through hole in stopping to dry cotton in canal. Repeat several times until cotton is saturated. Now seal hole in stopping. Usually one application of pyrozone, if this procedure is followed out accurately, will give a very satisfactory result, though it is sometimes necessary to repeat it once or twice. It is often well to enlarge the cavity or canal from the lingual, lessening the thickness of the discolored dentine to be penetrated by the bleach. If stain is due to metal such as German silver post or amalgam, this treatment will not benefit much.—V. C. S.

CORRESPONDENCE

WHY IS IT THAT EVERY LICENSED DENTIST DOES NOT BECOME A MEMBER OF THE DENTAL SOCIETIES?

Editor DENTAL DIGEST:

The above question is a title for a paper which I am preparing to be read before the Georgia State Dental Society. I am informed that less than 60 per cent. of the licensed dentists in the country are members of Dental Societies. I am impressed with the necessity of stimulating the organized bodies to educate those who are not members with us to line up. The most vital point to be stressed by the organized bodies is the necessity for Study Clubs among its members. Then each of us to act as individual committeemen, to impress the non-members with the fact of what they are losing.

I would appreciate suggestions from you as a foundation upon which to build my paper. If you think it worth while, it would be fine to ask the readers of your valuable journal to answer the question, and let us have it through its pages.

Thanking you in advance for your coöperation,

CHAS. F. CROUCH.

The DENTAL DIGEST invites a free discussion of the above letter, and it is requested that replies be sent to THE DENTAL DIGEST for publication.

AN INTERESTING QUESTION

Editor DENTAL DIGEST:

It ought to interest your readers to know that a patient recently presented who was over seventy-five years old and had never cleaned his teeth. He said no one ever paid any attention to the teeth in the section of sunny Italy from which he came many years ago (tooth paste manufacturers please note) and very few cases of dental trouble developed that he knew of.

He had a perfect set of grinders with the exception of one molar, recently extracted. He had gone to a dentist because that particular

tooth hurt him and the dentist extracted it, thus thoroughly convincing him that a dental office was a good place to stay away from.

Of course, ethically and scientifically speaking I know what you would do. You would put a tooth brush in the man's hand and give him his first lesson in oral prophylaxis.

But, from his, the layman's view, why should it be necessary to keep his teeth clean now if it wasn't during the seventy years those teeth were in his mouth?

Will someone also please explain in unscientific language, what preserved this man's teeth, while mine, which are cleaned three times a day, are constantly requiring attention?

CHARLES WOLFF, D.D.S.

FUTURE EVENTS

February 6-7-8, 1919.—The Minnesota State Dental Association will hold its next annual session at Saint Paul, Minnesota.

A program of unusual interest is being prepared and a cordial invitation is extended to all members of the National Dental Association, to attend this meeting. For information address—MAX E. ERNST, *Secretary*, 1125 Lowry Bldg., Saint Paul, Minn.

Mar. 6-7-8, 1919.—The Alumni Society of the Dewey School of Orthodontia will hold their next annual meeting in St. Louis. The usual high standard of the meetings of this society will be maintained. All interested in Orthodontia are welcome. Address communication to DR. GEORGE F. BURKE, 741-43 David Whitney Bldg., Detroit, Michigan.

April 14-15-16, 1919.—The 1919 Meeting of the Missouri State Dental Association will be held in the new Hotel Statler, St. Louis, Mo. A very elaborate program is in preparation and the St. Louis Dental Society who will act as hosts claim this will be the banner meeting in the State. H. F. D'OENCH, *President*, 1703 S. Grand Ave., St. Louis, Mo.; J. F. WALLACE, *Secy.* Canton, Mo.

A special meeting of the Iowa State Board of Dental Examiners, for the examination of applicants, will be held at Iowa City, Iowa, commencing March 10, 1919, at 9:00 A. M.

For further information address the secretary.

DR. J. A. WEST,
417 Utica Bldg, Des Moines, Ia.

ANNUAL CONVENTION OF THE TEXAS STATE DENTAL SOCIETY

The thirty-ninth annual convention of the Texas State Dental Society will be held at Waco, Texas, April 21st to 24th, 1919.

Several men of national prominence will conduct the Post-Graduate feature of the meeting, which will supplement the program of papers and clinics by members of the Society.

J. G. FIFE, *Secretary*,
736 Wilson Building, Dallas, Texas.

DENTAL ECONOMICS

WHY DRIFT?

GEORGE WOOD CLAPP, D.D.S.

I recently crossed a portion of New York harbor on a ferryboat. On the way over we passed many pieces of drift wood. Some were large and prominent. Some were small and hardly to be seen. All were busily bobbing to the waves and all were going to and fro with the currents. There may be an aristocracy in drift wood, based on size and prominence, but large and small were all the pieces alike in one thing—all were drifters.

The average dentist is a financial drifter. He works hard enough and long enough, but usually at fees determined by tradition or which he *feels* to be profitable. He rarely knows the amount of his annual net profit, or whether that amount is sufficient for his living in the present and provision for old age.

He is not steering for any known financial port nor is he propelled by intelligent direction of the business activities of his practice. He is busy enough, but busy-ness does not get one anywhere unless it is intelligently directed. The drift wood was busy—just bobbing about.

It is not easy to change from being a financial drifter, but it is important enough to justify the effort. One must determine his net profit and see whether the amount is sufficient for living in the present and in old age. If it is not, the necessary amount must be learned and provision made for the practice to produce it.

Most practices can be made to produce it, with justice to all, by ascertaining the number of income hours per year and adjusting fees to produce the necessary amount over office expenses.

Those who have changed from drifting to making definite progress do not belittle the effort required, but consider it well worth while.

All things are cheap to the saving, dear to the wasteful. Buy War Savings Stamps!

DIETETICS AND HEALTH

URIC ACID AND RHEUMATISM

"Rheumatism" and "malaria" have ever been two of our most convenient terms with sufficient elasticity to cover almost any symptoms not otherwise easily catalogued. Uric acid for many years was assigned as a causative factor in rheumatism and the lay world and the patent medicine people still gloat over this term. Now we know that uric acid is in a measure innocuous and rather an end product of a complicated process. Neither is dampness and exposure a direct cause of rheumatism, only to the extent that bodily functions are thrown out of balance. Rheumatism should be thought of as an infectious disorder of endogenous origin, in other words it is due to toxin or bacteria found within the organism. In the light of our best information these seem to be pus-forming germs and their ravages may be very remote from the site where they were produced. The tonsils and gums are now looked upon as arch-offenders in causing rheumatism, since they are so often the hotbeds of bacteria which are so easily dumped into the circulation. Rheumatism is therefore not to be considered as a definite entity but a condition that may be quite diversified in its manifestations as well as its etiology. It is nearly always due to poisons that are leaking into the blood and eventually set on a process in the serous membranes. Look for this source; if it is found and removed the rheumatism is "cured."—*Medical Summary.*

HABITS AND HEALTH

Organized society may purchase the extinction of the malarial mosquito. It may buy the eradication of the yellow fever mosquito, the rat of bubonic plague, the tick of spotted fever, the fly of sleeping sickness, or the louse of typhus fever or of trench fever. Organized society may buy clean, pure water, and it may purchase a successful food inspection. But it cannot buy habits of personal hygiene that produce human health; that defend the individual from disease and postpone his death. It

cannot purchase health habits that give the individual resistance to disease, making it harder for him to become sick and easier to recover. It cannot purchase the personal consciousness of individual obligation in the health affairs of the community that is essential to an effective defense of the community health.—T. A. Storey, M.D., Ph.D., on Physical Training.

OTHER AGES AND OUR OWN

A man exists in time and space, and while, for practical purposes, he has overcome the handicap of existing in space, he has made virtually no progress in overcoming the other handicap. The greatest impediment to correct judgment is that a man must live, think, and conclude in the now, and cannot effectively invade the then nor invade at all the hereafter.

A great deal is said about the value of time perspective, but it is too often forgotten that there are two time perspectives—one which will come some day and one which is forever gone. As to which is the more important there could be a pretty quarrel.

To judge, for instance, to-day's condition of man, it is a question whether the better position would be 1,000 years hence or 1,000 years back. There would be defects, probably, in a view from either post. In general it is likely that the perspective which looks back is apt to find too many faults, and that the perspective which looks forward is apt to make too great allowances.

The world to-day tends to be violently dissatisfied with itself, both with the condition it has reached and with its rate of progress toward better conditions. The historian of 100 years hence will probably fall in easily with the dissatisfaction, and if he gives any credit to 20th Century mankind at all it will likely be for its determination to speed up.

But suppose for a moment that any broad mind were set back 5,000 years, to the time and place of history's beginning; and suppose that mind should first look ahead the 5,000 years and see what had come to pass, and then wheel and look back the many laborious thousands of years that had already, in 3,000 B. C., seen venerable civilizations, built on the ruins of other venerable civilizations—what would be its judgment?

The chances are it would see more alone for mankind's permanent betterment in the few hundred years which we know as "modern times" than in all the rest of historic and prehistoric times. Even an imaginary squint in opposite directions from this dividing line is the best tonic for optimism that can be compounded.

JAPS HAVE FINE TEETH

"*Rising Sun*" (Japan) writes: "In a belated copy of P. W., which reached me recently, I read a statement to the effect that the Japanese don't use toothbrushes, but their forefinger, for cleaning the gums and teeth. This, I should like to say, is not so. The first thing a Japanese does on rising in the morning is to take his toothbrush, dry, and a packet of toothpowder, and walk up and down his verandah or in his garden for five or ten minutes vigorously scrubbing his teeth. Among rich and poor alike, whatever else may be unimportant, the toothbrush exercise is never omitted. Hence, result the finest teeth I have ever seen."

EXTRACTIONS

A man who is fearless is never a liar. He doesn't have to be.

Some women swear like men, while others will not even darn socks.

The only substitute for a chunk of wisdom is a chunk of silence.

Why not sentence old Bill Hohenzollern to be King of Ireland?

If your luck isn't what it should be, write a "p" in front of it and try again.

No man can make a fool of himself all the time. He has to sleep occasionally.

Teacher—Do you know that George Washington never told a lie?
Boy—No, sir; I only heard it.

"You can't," says one of the philosophers, "tell what a man knows by what he doesn't say." But you can generally tell by what he says what a man doesn't know.

Several weeks ago a Kansas editor advertised the fact that he had lost his umbrella, and requested the finder to keep it. He now reports: "The finder has done so. It pays to advertise."

"What started the riot at the performance of 'Hamlet' last night?"
"Why, Hamlet held the skull and said: 'Alas, poor Yorick! You are not the only deadhead in the house.'"

The Teacher—And now, children, what have you learned about the boy who stood on the burning deck?
The Kid—Even if the job was risky he didn't get cold feet.

I'm in a quandary great to-day—
Shall I study, or shall I play?
Study, they say, the brain expands,
Play develops limbs, feet and hands.
So I don't know which to choose,
A great big hat, or great big shoes.

Another Hun Outrage. A dentist reports that a German workman put ground glass in a partition between his laboratory and operating room. They stop at nothing!

The modest monkey that got loose in a big hotel made at once for the top floor. It takes a few thousand years of evolution to learn the trick of loafing in the lobby with an air of owning the whole establishment.

(Miss Prim)—At last I've met my ideal; modest, kind, patient, self-denying and ambitious, but, alas! he's married.
(Old Lady)—Don't worry, you'll get your chance. No woman will live long with a freak like that.

The farmer's boy came running in to his father to tell him that a German who lived next door had hung himself in his barn.
"My God!" said his father, "Did you cut him down?"
"No I didn't," answered the boy, "I don't think he's dead yet."

Mrs. Smith: Really, Mr. Giles, your prices are getting exorbitant.
Farmer Giles: Well, mum, it's this way: When a chap 'as to know the botanical name of wot 'e grows, an' the zoological name of the hinsect wot eats it, an' the chemical name of wot kills the hinsect, some one's got to pay for it!

"I understand," said the reporter, "that somewhere in this neighborhood a child was born yesterday weighing twenty-seven pounds. Do you know anything about it?"
"Know all about it," replied the corner grocer. "Its father is Bob Chunks, the iceman, and he weighed it on his ice scales."

He came from his farm to see Broadway. Clutching his wallet tightly he wandered around aimlessly until a girl winked at him. He let her lead him into one of the golden-hued lobster palaces. The light, the music and the people around him seemed to cast a spell over him. In one wild moment he forgot the precepts of his youth, forgot home, sweetheart, and mother, and glorying in the fact that he was so doing, took the fatal step. His eyes gleamed brightly as he summoned the waiter, saying, "two beers, right now!"

THE BEST OF CURRENT THOUGHT

[*The Dental Cosmos*, January, 1919]

Contents

Original Communications

The Foundation Principles in the Mechanism of Speech, and the Importance of Training the Speech of Cleft-Palate Patients After Operations. (Part I.) By Calvin S. Case, M.D., D.D.S.

The Application of Engineering Principles for the Predetermination of Arch Outlines. By Alexander Sved, B.S. in C.E., D.D.S.

Electrobiolytic Theory of Dental Caries. [Second Paper.] By Paul R. Manning, D.M.D.

Mankind's Greatest Benefactor. By George B. Potter.

To What Degree are Oral Pathological Conditions Responsible for Systemic Disease? By Percy R. Howe, A.B., D.D.S.

Root Resection. By Emerson R. Sausser, D.D.S.

Report on Dental Science and Literature. By Geo. B. Clement, D.D.S.

The Application of Surgery as One of the Four Basic Principles of Oral Restoration. By Jas. Kendall Burgess, D.D.S.

Trench Mouth and Its Treatment. By Joseph E. Redden, Lt.D.C., U.S.N.R.F.

Correspondence

Procain Anesthesia.

"Dentist or Stomatologist?"

Painless Pulp Extirpation; Fractured Roots Remaining in the Jaw.

A Trouble in the Casting of Gold Inlays.

Illustration—American Red Cross: The Dentist at the American Red Cross Military Hospital No. 5, at Auteuil.

Editorial Department

"The Wonderful Year."

Bibliographical.

Practical Hints.

Review of Current Dental Literature.

Periscope.

Army and Navy Dental News and Notes

Army and Navy Dental News.
Preparedness League of American Dentists.

Society Notes and Announcements

American Institute of Dental Teachers.
Philadelphia Dental College, Alumni Society.
Dewey School of Orthodontia, Alumni Society.
Minnesota State Dental Association.
Missouri State Dental Association.
Illinois State Dental Society.
Boards of Dental Examiners.

[*Dental Summary*, January, 1919]

Contents

Regular Contributions

Chronic Diseases of the Mouth. By K. H. Thoma.
Suppurative Gingivitis with Alveolar Involvement—A Surgical Procedure. By Arthur Zentler.
Technic of Root Preparation and Porcelain Jacket Crown Construction. By George A. Thompson.
Fractures and Dislocation of the Jaws. By Chalmers J. Lyons.
Ideas of Properly Handling Children in the Dental Office. By L. J. McRae.
To What Extent Can Root Fillings, Made by Some Modern Methods, Seal Bacteria Out of Dentin and Cementum? By Milton J. Damlos.
Preventive Dentistry. By David P. Houston.
When Many Six-Year Molars Can be Kept Vital and Saved. By J. A. Stuntebeck.
Exodontia of Impacted Teeth. By J. L. Austin.
Value of Orthodontic Treatment. By Oren A. Oliver.

Correspondence

Preparedness League of American Dentists—News and Notes.
This I Resolve to Do. By Charles F. Crouch.
Editorial—Much to be Thankful For—A Deserved Honor—The Recent Meeting of the Ohio State Dental Society—The Passing of The Dental Review.
Suggestions.
Ohio State Society.
Society Announcements.
News and Opinions—What Germany Has Lost (Map)—Lieutenant Commander Richard Grady, U.S.N.

NEW FACES FOR MUTILATED SOLDIERS

By Grace S. Harper

Chief of the Bureau for Reëducation of Mutilés, American Red Cross, France

Of all the results of war horrors, facial disfigurement seems the most cruel. What answer is there to the appeal: "How can I work with such a face? How can I live with my family or they with me?" Many can help the cripple, but few can administer to the need of such as these.

Mrs. Ladd and one of her blind and disfigured patients, who is now wearing one of her masks covering his eyes, nose, and cheeks

At Val de Grâce, the large military hospital in Paris, there are hundreds of soldiers who have suffered no crippling in their bodies but have horrible facial disfigurements. The famous French surgeon, Dr. Morestin, is there using his utmost skill in making these mutilés less repulsive. The men must often remain a long time at Val de Grâce because each layer of grafted skin must heal before a new one can be applied. There are perhaps 2,000 *mutilés de la face*, or disfigured soldiers, in France.

For more than a year Captain Derwent Wood, an English sculptor, has carried on research experiments in a hospital in London and has pro-

duced a permanent substitute for the rubber and gelatine ears and noses already being supplied to men whose mutilation is beyond the skill of surgery. These masks are modeled after photographs taken before the injury, and are cast and galvanized in silvered copper, after which they are realistically painted in oils to resemble the former appearance of the patient. Sometimes two thirds or more of a man's face can be replaced by this new process.

Published reports of Captain Wood's research studies reached the United States in 1917, and so came to the notice of Anna Coleman Ladd, a Boston sculptor. Mrs. Ladd went at once to France under the auspices

The mask, as thin as a visiting card, is cast and galvanized in silvered copper, and is sometimes held firm to the face by the use of spectacles

of the American Red Cross and has been rapidly developing her work after Captain Wood's methods.

Mrs. Ladd began her work in a large bright studio in the artists' quarter of Paris. After passing through an attractive courtyard overgrown with ivy and peopled with statues, and up a narrow staircase, one reaches her war work-room. On the walls hang posters, French and American flags and a service flag with two stars—one for her husband, Dr. Maynard Ladd, who is medical adviser of the American Red Cross in the French advance zone.

Mrs. Ladd's patients have grown attached to this sunny room. Problems have been solved here which, at the beginning, seemed insurmountable.

For instance, one mutilé wants a mask to cover his nose, an eye, and only half a cheek. The problem of how to make it hold—this mask ending in the middle of a cheek—has to be worked out. Another mutilé does not want to wear spectacles, which aid in securing a mask firmly to the head. This case must also be treated individually.

A row of plaster casts hanging on the wall of the studio indicates the first step in the process. Immediately after a mutilé asks to have a mask a cast of his face is made. From the negative mould a positive one is made and on this the new face is modeled in plastiline. Carefully following photographs and taking hints from the man himself, a good likeness comes from Mrs. Ladd's skilful hands. "My brother and I look a good deal alike," one soldier said, and the brother was asked to come to the studio. "I've a friend whose eyes are the color of mine," said another, and the friend was used as a model.

When the new face is modeled and approved by the patient, it is sent to the galvano plant and a galvano plastic deposit is made of copper. After repeated experiments this has been reduced to the thinness of a visiting card and weighs from four to nine ounces. It is firm and light to wear and neither bends nor twists out of shape. By carefully filing the edges for each individual case, there is no pressure on the facial parts and little consciousness on the part of the wearer of the extremities of the mask. Inside is put a thin layer of silver which eliminates all possibility of harm from the metal. There is space for ventilation and for dressings, if surgical treatment continues. Mrs. Ladd has discarded artificial eyes in favor of oil paints, in order to get effects of more depth, more dimness or more humor.

Eyelashes are cut in very fine copper threads and are soldered on. Next the mask is painted, and finally a mustache is added if the man wears one. When the disfigurement includes the entire mouth she models the lips sufficiently far apart to allow a cigarette holder to be inserted. Smoking is one of the few real pleasures permitted to the wearer of a face mask!

Mrs. Ladd paints the mask while it is on the man himself; this explains why the flesh tints where the metal parts stop seem to have no line of beginning or of ending. Skin hues, which look bright on a dull day, show pallid and gray in bright sunshine, and somehow an average has to be struck—the artist has to pitch her tone for both bright and cloudy weather, and has to imitate the bluish tinge of shaven cheeks.

The experimental stages of Mrs. Ladd's work may now be considered

as over, except for the ever-active search for improvements which must always go on. She has made masks for seventeen seriously mutilated soldiers, each one different.

The approval and gratitude of the French Government has been expressed by the assignment of wards in Paris hospitals, to which soldiers with facial wounds may be sent from all over France, where Mrs. Ladd and her assistants work for them.—*The Red Cross Magazine.*

ELECTRO-STERILIZATION OF ROOT-CANALS

Dr. L. E. Custer, of Dayton, O., has some very useful suggestions for the sterilization of root-canals so as to avoid extraction of teeth around the apices of which pus may have gathered. He would have us depend upon our own careful diagnosis of the conditions rather than submit tamely to the medical man's decree for wholesale removals. In support of his plea he says: "If for years the surgeon has been successful in sealing into man's anatomy a piece of boilerplate the size of a person's hand, and if he can weave twenty or more feet of silver wire into him, or if the soldier returns from the war practically waterlogged with lead bullets which he carries without serious inconvenience the rest of his life, is it not time that the dentist should be able to seal so small a thing as the apical foramen in a manner acceptable to nature? The answer lies alone in asepsis and good root filling." So much for the problem. Now for the proffered solution.

Electricity is used as an aid to sterilization, but, says Dr. Custer, "it is not electricity itself which sterilizes, but it is one or a combination of the three processes that go on simultaneously when a current of electricity is caused to flow through a liquid or semi-liquid conductor. These processes are all co-related and yet are quite different. First, we have electrolysis, in which the liquid is decomposed. Second, we have ionization, which is a step further than simple electrolysis. The solution is not only decomposed, but is split up with respect to the electropositive and negative character of the two bodies which we now call ions. These ions are charged respectively positive and negative, and move towards poles of opposite polarity where they unload their electric charges. It is by the splitting up of the liquid into ions that a liquid is able to conduct electricity. And the third phenomenon is cataphoresis, in which, under certain conditions, the fluid is caused to travel bodily from one pole to the other without suffering decomposition."

It is a much-mooted subject as to which of these foregoing processes really brings about the process of sterilization, and we shall have to

assume that the current passing through any liquid or semi-liquid which is a good conductor, tends to destroy bacteria.

The earliest records of the attempt to apply this method to dentistry dates back to Dr. Rhein. Of his method Dr. Custer says: "He used a pure zinc wire for the electrode in the tooth, and with this he used principally pyrozone. When an apical abscess was present he forced the zinc wire entirely through the apex, depending upon the electric action about the zinc wire alone to break up the abscess; and he claimed remarkable results from this procedure. I wish to impress upon you his extreme faith, not only in the use of a zinc wire with some such agent as pyrozone, but in the wire alone at the apical foramen. But, unfortunately, he finishes the operation by filling the pulp canal with gutta-percha."

Dr. Custer has adapted and extended this technique in his own method. (For a full report of same refer to *The Dental Record* of November, 1918.)

He uses a cataphoric outfit for the work. In this the two electrodes are close together so that the fluctuating current is less liable to be felt by the patient. The negative electrode is placed opposite the root to be treated. It is made from a stiff wire about the size and shape of a lady's hairpin, and having a soft rubber polishing cup on either end. It is held in position on the alveolus simply by reason of the tension between the two cups. Each cup is filled with a fresh cotton pellet saturated with salt solution. The positive pole consists of a zinc cone, which later on may be used in filling the pulp canal. The solution used has to be carefully selected if suitable results are to be obtained. Dr. Custer recommends Dakin's solution for use in the root canals or a few drops of alcohol, which, not being an electrical conductor, is made so by the addition of a few crystals of common salt.

As to the technique: "The solution is placed in the root-canal, and the positive electrode is introduced just far enough to make contact with the solution which will be shown on the ammeter. Do not yet force the cone to the apex, for then the principal effect will take place in the apical region. What we want is to sterilize the dentine. Increase the voltage until the patient feels it. Now what happens? Simply this: two processes are going on in the pulp canal at the same time, namely, electrolysis and cataphoresis. Part of the solution is decomposed, liberating nascent chlorine, a decided germicide, and part is cataphorically carried into the tubuli and part through the apex. This procedure is to be kept up until the zinc cone, following up the evaporation of the solution, reaches almost to the apex of the root and the ammeter has returned to zero or thereabouts. This indicates that the solution has disappeared. Part has been driven into the dentine, part through the apex and part

has passed into a gas. If now the zinc cone is forced through the apex the ammeter finger will suddenly swing some points to the right." It is possible, points out the author, to find out in this way the true length of a root canal, the measurements being vastly more accurate than those obtained by the most careful x-ray pictures.

After thorough sterilization of the canals it is necessary to fill them. The ordinary plastic materials such as chloro-percha and resin solutions will not do because of their shrinkage. It is best to use some substance which will harden, not by evaporation but by crystallization. Oxy-chloride of zinc answers this purpose very well. Ordinary oxy-chloride of zinc will not conduct electricity, but may be made to do so by mixing with the oxide powder about equal parts of metallic zinc. This mixture is worked into the canal and is followed by a zinc cone (metallic) which is allowed to remain in the root canal as part of the filling. If the oxy-chloride of zinc sets too quickly for use in the filling of the canals, add a little borax to the liquid.

Now, if an abscess should develop about the root of a tooth filled with the oxy-chloride of zinc, together with the powdered zinc and metallic zinc cone, it is possible to quickly sterilize the area without removing the root-filling, because the electrode is already in place in the canal. The use of zinc is preferable to that of copper or silver, because it does not cause any discoloration to the tooth substance.—*Oral Health.*

ADENITIS OF DENTAL ORIGIN

Landete is professor in the dental school. He gives an illustrated description of the relations between the glands in the face and neck and the teeth, tracing the development of infectious processes in connection with different teeth, especially in children. The differential diagnosis is discussed, and the advantages of vaccine therapy are extolled when the adenitis is once established. If the effect of the vaccine in a few hours is slight or transient, this warns of the presence of pus which must be cleared out of the way before the vaccine can exert its efficacy. The focus must be drained continuously. He prefers for this a loop of fine copper wire, such as is used for electric light, the outer ends turned back, and the whole held in place with a strip of gauze. This little loop can be inserted and removed without inconvenience through a minute incision. He prescribes flushing with an antiseptic unless the cavity is so large that the Carrel method can be applied. Even when the adenitis is only indirectly connected with the mouth, the vaccine made from the mouth germs still manifests its efficacy. Although if the streptococcus or other

germ is positively recognized, its specific vaccine can be used. Otherwise the mouth vaccine should be given the preference, and he reports striking success with this even with severe furuncles, anthrax, etc., quite far from the mouth. On the other hand, he has sometimes obtained good results with other vaccines, the staphylococcus for example, in buccal and perimaxillar infections. The vaccine he used is made by the municipal laboratory from a mixture of various specimens of streptococci and a gram-negative diplococcus isolated from the roots of teeth recently extracted, from pus from osteomyelitis of the jaws, from the exudate of a pathologic eruption of the teeth, etc. These bacteria are found constantly in healthy mouths and in polymicrobian buccal infection. They can be readily cultivated in fresh and unaltered human blood or the usual culture mediums. The vaccine contains 250 millions per cubic centimeter, killed by chloroform and heating to 55 C. for half an hour. The sterility is tested by aerobic and anaerobic cultures, and by subcutaneous injection of 2 c.c. of the vaccine in a guinea-pig, weighing 300 gm., without appreciable local or general reaction. Wounds of the mouth, complications of carious teeth, adenitis, osteomyelitis, etc., all benefit both in prophylaxis and in treatment. For the latter he injects 0.5, 1, 1.5 and 2 c.c. in turn with intervals of from two to five days. In prophylaxis, he injects 0.5 c.c., doubling this dose after two days. For children of 5 to 10 he uses a half of the adult dose, and from 3 to 5 a quarter. The doses should also be reduced for patients with heart or kidney disease or suspected of tuberculosis. There may be a general, local or focal reaction, and these should be supervised to avoid the focal reaction, in particular. The vaccine kept in a cool, dark place has shown no appreciable alteration over periods of more than a year.—Spanish Archives of Pediatrics in *Journal American Medical Association.*

BASIC PRINCIPLES OF PHYSIOLOGY

By Samuel E. Pond, A.M., Worcester, Mass.

INVOLVED IN (A) THE DESTRUCTION OF BACTERIA WITHOUT THE DESTRUCTION OF TISSUE CELLS, AND (B) ELECTROLYTIC, OR SO-CALLED IONIC, MEDICATION

(FROM THE RESEARCH INSTITUTE)

The attempt has been made by certain great students to study function and vital phenomena after the methods of physical chemistry, leading to a study, in a more exact sense than heretofore, of the transformation of living tissues. In the case of teeth, especially infected, pulpless teeth, there has been no definite progress. The first step known to the speaker was undertaken two years ago by the Research Institute to test some of the principles of physical chemistry and general physiology in the light of dental problems. Work was undertaken in connection with the problem of "ionic medication."

Upon the first topic you will recognize at once, from the facts presented this morning and the facts in the literature up to the present time, that it is relatively impossible to destroy bacteria *without destroying body tissue cells*, except for one possibility. It rather looks as though it were probable, nevertheless, to do this, to some degree, by meeting the bacteria upon their own ground, their specific composition and structure, possibly through bacteriolysins and anti-bodies of that order. These are the only factors to our knowledge that will destroy bacteria without destroying living tissue cells. Reagents which we now use, inorganic and organic chemicals, physical and mechanical forces, do destroy living tissue cells practically to the same extent as bacteria, but we have one factor in favor of destroying bacteria in the presence of living tissue cells. We may sterilize infected tissue, *i. e.*, transform an active agent into an inactive agent, in the presence of a rapidly regenerable body tissue. And it may be that what may kill bacteria may stimulate certain living tissue cells to renewed activity. In terms of general physiology—to use a more or less exact terminology, infection is largely a metabolic effect, a breaking down more rapidly than building up, either by a parasite, whether animal or plant, or the product of that metabolism. In the case of bacteria, infection may be the result of the transformation of living material by the bacteria, or the dissolution of living tissue by the toxins produced by these cells. In like sense destruction of bacteria (sterilization) would be either the destruction of the toxin and the bacteria—you might say the neutralization of the

toxin and the destruction of the bacteria—or a change in the body tissue cells so they will secrete, if I may use that word, an antitoxin or some cytolitic agent which will take care of the bacteria, not alone of the toxin. We use here two terms, inhibition or antiseptic and disinfection or sterilization. The former is really the checking of the growth of bacteria or the neutralization of toxins. Disinfection or sterilization means destruction of the bacteria themselves.

An analysis has shown that bacteria are living, functioning cells, like other living cells. They are surrounded by a semi-permeable membrane which functions just like the vital membrane of any embryo egg or cell, and about that in most cases appears a capsule composed largely of cellulose. The difference between the bacterial cell and the living body cell is in the capsule of cellulose. Rarely do we find cellulose in animal tissues; most regularly in plant tissues. To destroy bacteria without destroying living tissue cells, it may be possible to destroy the cellulose layer, and thereby destroy the bacteria, if the cellulose were necessary to the functioning of that bacteria. It has been definitely proven that the cellulose layer only functions at certain times, and until we know the characteristic of individual species of bacteria, we cannot predict what agents will destroy bacteria encapsulated by the cellulose layer, and not destroy human tissue cells.

We are then faced by the situation of having living body tissue cells of various compositions, and bacteria as living cells of a different composition, in both cases surrounded by a functioning semi-permeable membrane. This is brought into the discussion for a specific purpose. The relation between structure function is vital. In living tissues if you destroy the structure, you destroy the function; if you destroy the function you destroy the structure. Almost in the same way is this, for illustration, borne out by a river. Here it means nothing, if there is no water. It would be no river if there were no bed or bank or source or mouth. If you alter any of these, you alter the function of that stream. If you change the quantity of water, its rate of movement, its composition, you change the structure. In a far greater sense are structure and function vitally related in living tissues. If you destroy this relationship, especially the composition of the membrane which keeps living material within the cell different from that outside of the cell, you destroy the functions of that cell. If you can get a reagent, or reagents, in contact with bacteria in sufficient quantity (where the bacteria are localized in a greater quantity than the living tissue cells, *i. e.*, local infection), you may destroy the vital relationship in the case of the bacteria without destroying this relationship in living body tissue cells.

Suppose about the tooth apex you have a localized infection, where supposedly there is largely a mass of bacteria. If your reagent be present in sufficient quantity only to kill the bacteria, you would not antagonize, to any great extent, any living tissue cells. The living tissue cells probably would have but a small portion of the reagent to take care of. That was presumed to be probable and is the backbone of the electrolytic medication. Those conditions, however, do not always prevail. The infection may be spread about. Then you will realize there is not a simple situation to tace, but a difficult one. The bacteria you are attempting to destroy may be in the tubuli, in the pulp chamber, in the peridental membrane, between that and the tooth tissue, between that and the alveolar tissue. To concentrate a mass of reagent so that it will destroy the bacteria and not the living tissue cells, you have a complex problem and, first, in getting the reagent from the pulp chamber to the infected tissue.

There exists within the tooth tissue certain physical and chemical conditions that we must contend with—take those of the tubuli, for example. In order to have certain chemical reagents like zinc chloride or silver nitrate diffused through the tubuli, they must counteract the opposing forces, surface tension and so on. Silver will not readily penetrate the tubules of the tooth wall. Zinc will not, even under the stress of electric current, and even though the tooth wall bears a negative electric charge which should aid the penetration. Copper will penetrate. From iodid of potassium, iodid ions will not penetrate. The passage of the ions appears to depend on the size of the tubuli, as well as the electrical charge of the wall. About the apex, we are dealing with a larger aperture and a different condition exists. To reach the infection in and about the tooth, not at the apex, the reagents must overcome a considerable number of opposing forces. At the apex, however, to get a mass of the reagent sufficient to kill bacteria is quite a problem. Last summer it was undertaken at the Research Institute to determine how much this were possible, using a mixed culture of bacteria, not an individual species, and under conditions where the diffusion of the chemical reaction was almost immediately uniform—conditions which cannot prevail in the tooth. You will recognize that one cannot have a certain amount of sulphuric acid or zinc chlorid at the localized area as easily as you can in a test tube. We have, then, more ideal chemical conditions prevailing in the test tube and, hence, it would not necessarily indicate that, if we could kill the bacteria in the test tube, we could in the periapical tissues.

Surprising results came from that series. Concentrated sulphuric acid did not kill the bacteria in five minutes, a mass of bacteria grown

within the twenty-four hours from an infected tooth; that culture, known to be active, stood the action of an equal volume of concentrated sulphuric acid for between five and fifteen minutes. Hydrochloric acid (*i. e.*, concentrated, about twenty-eight per cent.), was effective in five minutes. Iron salts, saturated solutions, were active in two hours. Lower percentages were not effective. Copper sulphate was active in about the same time. Bichlorid of mercury was active in all its concentrations used in five minutes. Aluminium chlorid inhibited the growth of bacteria in two hours, but did not prevent the growth. You will see from this that a certain mass of chemical agents and a certain mass of bacteria are related. It requires a certain mass of the reagents to change the active bacteria into inactive agents. And this change takes time. You cannot expect disinfection to occur immediately, and you cannot have the same results about the teeth that are recorded in the test-tube experiments.

It seems almost impossible to rely upon the agents which have been used in electrolytic treatment as disinfection agents, even if they pass through the apex or through the walls of the tooth, in any concentration which (within two hours in a test tube), will disinfect an active growth of bacteria.

The number or quantity of bacteria (which were virile) exposed to the chemical action was not known in this case. That makes a great difference, for a culture that is not active may be controlled easily; and further, the mass of bacteria, the mass of their potential food, and the temperature under which bacteria exist have much to do with disinfection. In the living body we have other things to contend with. The acid content of the body tissues makes a big difference, and that again was not taken into consideration in the test referred to.

Further studied was the effect of electric current upon bacteria. Weak currents do not appear to kill bacteria; they do not kill living tissue cells. What, then, happens? The electric current is carried from one electrode to another in both directions by so-called ions, particles of matter bearing specific electric charges. Electricity cannot be conducted in liquid conductors except there are such particles. When the current passes through a mass of bacteria, the ions are moving from the positive to the negative and from the negative to the positive poles. The bacteria and other living cells accommodate themselves to the changes in this ionic content at their membrane surfaces. If you change the ionic content in the medium so that it is different from that which exists in the living tissue, you may kill the bacteria. Increasing the electric current to 100 volts d. c. there was heating, and it was found with the passage of the electric current for one minute that an active

bacterial growth was inhibited, and, further, that disinfection ensued in five minutes; but when the temperature was kept below 37.5 C. no disinfection ensued after the passage of the current for over three hours, showing that even strong currents are not always effective.

With the combination of electric current and electrolytes many investigators were led to think there was an electrolytic change. We are here, you will recall, discussing *direct action* of electrolyte or current, or both, upon bacteria and living tissue cells.

What happens to the electrolyte during the passage of electric current is the discharge of the particles of matter at boundary surfaces. If this is true, when you bring heavy metal salts to the peridental membrane, you are likely to destroy the membrane. It may be regenerated, but you destroy it beyond regeneration unless the concentration is low and the time of action is short. During the passage of the electric current, this discharge of the particles is called electrolysis, that is, the deposition of metallic elements at the poles. It was presumed there might be such an electrolytic effect in the body. Careful tests are very difficult. One result of our investigation has been to discover the evolution of chlorin, hydrogen, oxygen and the deposition of some metal salts. The effect of these gases in the periapical space has not been determined, and must be before definite knowledge will be obtained. The effect of the heavy metal salts is known. In some cases where there is not a proper content of blood or body tissue sufficient to antagonize such ions as zinc or sodium, many of the living body cells are destroyed more rapidly than bacteria. With some ions, the living body cells react more slowly than the bacteria. It looks as though a concentration of such ions would be more effective in destroying bacteria than living cells. But more careful tests must be carried out.

We are trying to get a more or less exact knowledge. This is not wholly satisfactory, and the study of the direct action of electrolytes, electric current, and electrolytic products on bacteria seems to indicate that, unless we use other ions than those which have been used, we cannot destroy, under conditions which prevail in the human body, bacteria without destroying living tissue cells. There is, however, this to note: The bacteria and living tissue cells react with some elements and form compounds which are disinfecting in themselves. Such has been the discovery of Dakin and others, that chlorin, which forms a chloramine group, non-toxic to living body cells, is highly toxic to bacteria. We also have the secretions of living forms to consider. We may attempt to bring about phagocytosis, first neutralizing the toxins produced, then destroying the bacterial cells, and probably destroying the protoplasm of the bacteria. There appears to be a relationship between the molecular

structure of the cells and the antitoxins which are produced in combating infection.

There has arisen another fact. It has been found that the addition of certain salts like barium will transform living protoplasm into a membrane-like constituency. It has been likened, by Bancroft at Cornell, to the transformation of cream into butter. In cream we have water with fat particles suspended; in butter we have fat with water suspended. We speak of these as emulsions. In one case the water is continuous, and in the other water is discontinuous. Under the microscope it has been observed that it is possible to change a water suspension to a fat suspension, and the reverse. Those changes apparently do go on in the living tissue, and as a scientific guess, it is presumed the membrane is formed from protoplasm by that means. Many elements come to the surface of cells and affect the protoplasm there, and at certain definite boundaries change the structure materially. If that is true, we may, instead of having water supported in a fat system, as at the membranes, say of bacteria, reverse this condition and have water the continuous phase, destroying the normal functions of these cells. That is presumably the action known as cytolysis; and cytolysis is closely related to disinfection. We are, then, dealing with the possibility of the destruction of the membrane by an apparently nontoxic agent, which changes the structure and relationships of the membrane.

The question of getting destructive agents at the sources of infection remains open. So far we have carried out the series of experiments with electrolytes of the heavy metals, silver, copper, aluminum, iron and other metals as well, and have not found them satisfactory, because many of them will not penetrate the tubuli of the tooth wall. Some agents have been found to change the membrane and change the structure of the bacteria, through the use of calcium in one case or sodium salts in another case, and this may explain why many definite results are being obtained with sodium chlorid. The sodium ion may pass through the apex and the tubules, and possibly reverse the phase of the membrane and destroy certain bacteria. That does not apparently hold as to mixed bacteria. When the results of this experimentation are carried further, you may know whether that is possible.

It was supposed the electric current carried the electric particles through the apex only, but in many cases the foramen is so constricted this is not possible. As pointed out, gas is evolved at the apex, and the current ceases through that channel, throwing the bulk of the conduction of the particles upon the tubuli. There we are dealing with very complex phenomena, and there is no way of telling at present what effect we are producing upon living tissue cells.—*The Dental Summary.*

DENTISTRY FOR ALL THE PEOPLE

By Dr. Allen Suggett, San Francisco

Read before the Pacific Coast Society of Orthodontists, San Francisco, February 19, 1918

A comprehensive survey of all the benefits that dentistry in all its branches is conferring on those who can afford to pay for it, would naturally suggest the question—What effort is being made to render these great benefits available to all the people?

If good teeth, healthy mouths, and perfect occlusion, are so necessary for the health, comfort, and happiness of peoples, then to bring this about should be the ultimate goal of every dentist. In this respect other countries are making greater strides than we are. In 1910 the school children of thirty-three cities in Germany were furnished dental services by the government. England is proposing to socialize medical and dental services.

Not many years ago, schools were only for the rich, and colleges only for the literary. Everyone who could not pass an examination in the classics was thrown on the scrap heap, as far as a chance of getting an education was concerned.

This condition has gradually been changed to meet the wants and demands of society, until instead of just one literary course, there is at least one university that gives as many as 500 different courses.

The trend of the time is to have conditions so favorable that everyone coming into the world may have a chance to do the thing for which he has the most talent. Schools, industries and the professions are being socialized as never before, for the most conservative have to admit that the common good must first be served during these times.

If it is necessary to take care of our health, so we can fight better, why is it not equally necessary in the great fight for subsistence?

If we take the bodies of the fathers, sons and brothers and put them in the trenches from which many will never return, if we can take the lives of our people for the common good, why not take the wealth for the common good, not only for war, but for peace, health and happiness?

We have free schools and free books, but what good are these if we do not conserve the health? It is not even good business to neglect the physical and mental well-being of the people, and then have to support them in idleness, in hospitals and jails.

I examined the mouths of five hundred children in five of the public schools of this city and found about 85 per cent. in need of dentistry.

Some had as many as twenty-one cavities, many had abscesses. Frequently the abscesses had broken on the face, producing permanent scars. Many of them had worn poultices of fat meat, etc. It was pitiful to see some of them suffer from toothache and lose valuable time from school. There was the usual per cent. of malocclusion with all accompanying symptoms—narrow arches, receding chins, adenoids and tonsils, etc.

The expense of dental service is beyond the financial means of most of them for they are not even properly clothed or fed. Here is the source of the great horde of unfits, and they in their turn beget more unfit, and so on down the line.

Medicine is working toward prevention, dentistry is dreaming of a time when we will prevent rather than cure, when we will also be one of the important factors in preventing the unfit. Now is the time when everybody is thinking of the common good and to push ahead those democratic measures which will bring it about. They will be opposed by some as impractical, just as freeing of the slaves was opposed, and free speech and free press, free public schools, the pure food law, and the thousand other rights the people have won.

If it is democracy to take care of the mouths of the soldiers and sailors why not also of the people? We are making a feeble effort to do it by charity. If they have no right to this service why attempt it by charity? If they should have it, it should be done by tax support. We give charity when we should give justice. Charity only puts off justice. If all the rich and influential people who are in the Associated Charities, the Catholic Societies, the Hebrew, the Methodist, the Episcopalian, and the hundred and one societies which are working so hard to relieve the distress of the poor, should unite all their resources and demand of the legislature and city councils appropriations to do this service under state, county and city laws, in a democratic way, it could not be refused.

Now is the time to push all these measures forward, for the people are thinking of service, as they never thought before. If soldiers cannot fight effectively without good teeth and healthy mouths, how could they mine coal, can fruit, plant crops and make delicate instruments?

There are plenty of dentists and physicians who would gladly work for the state for much less than they might make in private practice. To prove this we need only mention army officers, judges, college professors, etc.

If dentists were employed by the county, just as the teachers, the judge, the sheriff, and county physicians, they could do preventive instead of almost entirely reparative work. Dr. Fones reports that as the result

of four years' prophylactic work he has been able to reduce caries from 85 per cent. to 15 per cent.

There would be many details of the modus operandi to work out as they came up. As to pay, it would be less than many are able to make in private practice. For those who would prefer state work, there would in time be worked out pensions, etc., as in the army, so that the dentist would not have to save up for a day that might never come. He could freely and safely use his income for the education of his children, pleasure, etc. If his children were properly educated they would be able to earn their way in the world. If everyone had to serve and earn his way useful labor would cease to be a reproach. There would be no wealthy unemployed; there would be no poor unemployed, and all could serve in their own way.—*Pacific Dental Gazette.*

ETIOLOGY OF MOUTH BREATHING

The blocking of the nasal cavities from the enlarged tonsils and adenoids is the main cause of mouth breathing in children. When the nasal cavity is blocked in this way, it is impossible for it to develop normally. It is in these conditions that you find the high arched palate and the protruding jaw. For when the child breathes through the mouth during sleep, the force of the air striking the arch and the upper jaw, together with the negative pressure that exists in the nasal cavity at this time, causes most of the deformity of the features. Not only this, it causes a buckling of the nasal septum, which in turn causes a partial closure of one of the nasal chambers, and often both of them, for many times the septum is bent in the form of the letter S. These conditions cause a congestion of all the mucous membranes in the nose, which causes the blocking of the sphenoidal sinus, ethmoid cells, frontal sinus and the antrum of Highmore, and this congested condition produces a stasis in the region of the ethmoid cells, which in turn produce polypi in the nose.—*The Dental Summary.*